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FRONTISPIECE

Nature weeping over the Tomb of Buffon

A

HISTORY

OF THE

EARTH

AND

ANIMATED NATURE:

FROM

M. DE BUFFON, GOLDSMITH AND OTHERS.

EMBELISHED WITH UPWARDS OF

ONE HUNDRED ELEGANT COPPER-PLATES

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Representing some Hundreds of Figures.

IN TWO VOLUMES.

VOL. I

ALNWICK:
PRINTED AT THE APOLLO PRESS,
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And Sold by all the Booksellers in England and Scotland.

1810

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PREFACE.

AMONG the numerous subjects that are continually issuing from the Press, few are of greater utility than those that relate to Natural History. A science that is every way easy, entertaining, and instructive; and which appears congenial to the nature of man, in every stage of his life. The infant on his first entrance into life, is naturally led to employ his opening faculties in observing exterior appearances, of the things which he perceives around him; and as soon as he has acquired the use of speech, he desires to be informed of their qualities and use. When grown to maturity, he sees himself placed in a boundless amphitheatre filled with an immense variety of objects, which solicit his attention, but through want of previous instruction is often lost and confounded in the magnificence and multiplicity of those scenes which nature presents to his view.

The study of Natural History impresses the mind with the most exalted ideas of that Divine Being, by whose eternal fiat, the universe was brought into existence, and by whose infinite power and love the lives of his creatures are preserved, and their wants abundantly supplied. The volume of nature is the Book of God, ever open to the eyes of mankind. In the primitive ages of the world, previous to the Epoch of Revelation, man had no other guide to direct him to the knowledge and attributes of the Deity, than the contemplation of his works.

By the study of Natural History we store our minds with a resource against *ennui*, we will never be at a loss to pass our time, nor be driven to seek amusement in the insipidity of a card table, or in the senseless roar of Bacchanalian revels.

The compiler not intending this work for the use of those who make the study of Natural History the principal object of their pursuit, but for those, who without having leisure to devote themselves wholly to the study of this science, would not wish to be totally uninformed of the works of nature; he has not therefore thought it necessary to confine himself strictly within the rules prescribed by systematic writers; as it was not so much his plan to lay down a methodical arrangement of animals as to give a clear and concise account of their nature and habits.

The compiler, in composing this work, has, in the first place given the reader a short sketch of the universe, and the structure of the solar system; he is next presented with some of the most striking phenomena which this earth and atmosphere present, such as Seas, Mountains, Volcanoes, Winds, Tides, exhalations, &c. A transition is then made from the inanimate creation to animate nature; when the reader is given a brief history of Man, through every stage of his existence, with the causes of the apparent varieties in human nature. His attention is then called to a survey of the animal kingdom in general, viz. Quadrupeds, Birds, Fishes, Reptiles, and Insects. Those creatures which are peculiarly curious in their conformation or habits, and those which are most formidable or most beneficial to man are particularly selected and described.

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THE

HISTORY OF THE EARTH.

CHAP. I.

OF THE EARTH—ITS FORM AND COMPOSITION—OF ATTRACTION—REPULSION—ELEMENTS—HEAT—AIR—WATER.

THE æra at which the matter of this earth was called into existence, and actuated with motion, seems to be for ever hidden from the curiosity of mankind. The holy scriptures record the creation of the world, in general language, implying rather that it had, indeed, a beginning than that it began to exist at any particular time. History, sacred or profane, carries us backward, through an unbroken series of consequences still arising out of their proper causes, but for the space of a few thousand years. Philosophy, observing, calculating, and commemorating the appearances and revolutions of the heavenly bodies, to the system of which this orb belongs; or penetrating into the bowels of the earth, and the depths of the ocean, to trace the irregular disposition of these strata, and the strange confusion in which their materials are often intermingled together; may amuse us with suggestions, that these spheres have continued to roll through countless myriads of ages; that this or that series of phænomena accompanied the production of the earth into its present form; but, has been hitherto unable to enlarge the testimonies of recorded history, or to refute its authority, concerning the origin of things, with any demonstrative, or decisively satisfactory evidence. Our present business shall be to state such facts as have received general approbation, and to adduce such others as cannot fail to give the reader pleasure and satisfaction.

Astronomers tell us, that this earth which we inhabit forms but a very minute part in that great assemblage of bodies of which the world is composed. It is a million of times less than the sun, by which it is enlightened. The planets also, which, like it, are subordinate to the sun's influence, exceed the earth one thousand times in magnitude. These have been discovered as forming, with our earth, a system of bodies circulating round the sun, all obedient to one law, and impelled by one common influence.

Modern philosophy has taught us to believe, that, when the great Author of Nature began the work of creation, he chose to operate by second causes; and that, suspending the constant exertion of his power, he endued matter with a quality, by which the universal economy of nature might be continued without his immediate assistance. This quality is called attraction; a sort of approximating influence, which all bodies, whether terrestrial or celestial, are found to possess; and which in all increases as the quantity of matter in each increases. The sun, by far the greatest body in our system, is, of consequence, possessed of much the greatest share of this attracting power; and all the planets, of which our earth is one, are, of course, entirely subject to its superior influence. Were this power, therefore, left uncontrouled by any other, the sun must quickly have attracted all the bodies of our celestial system to itself; but it is equally counteracted by another power of equal efficacy; namely, a progressive force which each planet received when it was impelled forward by the divine Architect upon its first formation. The heavenly bodies of our system being thus acted upon by two opposing powers; namely, by that of attraction, which draws them towards the sun; and that of impulsion, which drives them straight forward into the great void of space; they pursue a track between these contrary directions: and each like a stone whirled about in a sling, obeying two opposite forces, circulates round its great centre of heat and motion.

In this manner, therefore, is the harmony of our planetary system preserved. The sun, in the midst, gives heat, and light, and circular motion to the planets which surround it. Though we see the greatness and wisdom of the Deity in all those worlds around us, it is our chief concern to trace Him in that which we inhabit. The examination of the earth, the wonders of its contrivance and formation, are the proper business of the Natural Historian.

The surface of this globe presents us with heights, depths, plains, seas, marshes, rivers, caverns, gulfs, volcanoes, in the disposition of which, upon a slight view, we observe neither regularity nor order. If we penetrate into the bowels of the earth, we discover metals, minerals, stones, bitumens, and in short, matter of every kind as it were without any apparent design. Upon a more accurate inspection we perceive matter in every form, blended in a chaos of confusion, which can be compared to nothing but the ruins of a world.

Amid these ruins, however, the different generations of animals, and of vegetables succeed each other in a beautiful and regular order. With respect to us, the earth, formerly a chaos, is now become a delightful habitation, where every object affords amazing displays of the power, of the intelligence, and of the beneficence of its great Creator.

In examining and describing the surface of the earth, the first object which solicits our attention is that body of water with which the greater part of the globe is covered.

When we explore the bottom of the sea, we discover hills and valleys, plains and hollows, and rocks and earths of every sort. We discover that islands are only the summits of vast mountains; we likewise find other mountains whose tops almost reach the surface of the water; and rapid currents which counteract the general movement; and of which the motion is sometimes in the same direction, and at other times retrograde. On the one hand we meet with tempestuous regions, where the heavens and the ocean seem equally confounded in the general shock; violent intestine emotions; tumultuous swellings, water-spouts, and strange convulsions produced by volcanoes, and dreadful whirlpools. On the other hand, we discover vast regions always calm, but equally dangerous to the mariner. In short, when we direct our eyes towards the polar regions, we perceive huge masses of ice, which having detached themselves from them, advance, like floating mountains, till they dissolve in the temporate climates.

But when we take a view of the land: what a difference takes place in different climates! what a variety of soil! what inequalities in the surface! Yet from attentive observations we find great chains of mountains lie nearer the equator than the poles; that, in the old Continent, their direction is more from east to west than from north to south: and the figures and direction of these mountains which appear most

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In our examination of the upper stratum of the earth, we find it to be universally of the same substance, which is nothing else but a composition of the decayed parts of animal and vegetable bodies. Penetrating a little deeper, we discover the real earth, beds of sand, lime-stone, clay, shells, marble, gravel, chalk, &c. These strata are always parallel to one another, and of the same thickness thoughout. In neighbouring hills, strata of the same materials are uniformly divided by perpendicular fissures. Shells, skeletons of fishes marine plants, &c. perfectly similar to those of the ocean, are often found in the bowels of the earth, and on the tops of mountains at a very great distance from the sea. Petrified shells [illegible] every where in prodigious quantities, [illegible]ks of marble and lime-stone, in earths and clays, but incorporated and filled with the same substance with which they are inclosed. Indeed all marble, lime-stones, chalks, marles, clays, sands, and almost all terrestrial substances, are full of shells and other spoils of the ocean.

The changes which the earth has undergone for the last two or three thousand years, are inconsiderable, when compared with those revolutions which succeeded the creation. For as the surface of the earth was at first much softer than it is now, of consequence the same causes which at present produce but slight alterations for many centuries, were then capable of producing very great revolutions in a few years. It is very evident, in my opinion, that the dry land, and even summits of the highest mountains, were formerly covered with the waters of the sea; because shells and other marine animals are still found upon the very tops of mountains. It appears too that the waters of the sea have remained a great number of years upon the surface of the earth; for such immense banks of shells have been discovered, as to render it impossible for so great a number of animals to have existed at the same time. This circumstance proves pretty clearly, that, though the materials on the surface of the earth, were then easily disunited by the water, yet these transportations could not be suddenly effected. Even though it should be supposed, that, at the deluge, all the shells were transported from the bottom of the ocean and deposited upon the dry land; yet, besides the difficulty of establishing this hypothesis, it is evident, that as shells are found incorporated in marble, and in the rocks of the highest mountains, we must likewise suppose that all these marbles and rocks were formed at the same time, and that too when the deluge took place; and that before this grand revolution, there were neither mountains, nor marbles, nor rock, nor clays, nor matter of any kind like that with which we are now acquainted.

But without dwelling any longer upon this particular, I shall confine myself to well authenticated facts. It is certain, that the waters of the sea have, at one period or other, continued for a succession of ages upon what we now know to be dry land; and that, of consequence, the vast continents of Asia, Europe, Africa, and America, were then the bottom of an immense ocean, replete with every thing which the present one produces, and must, therefore, have

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irregular, correspond so, that the prominent angles of one mountain are constantly opposite to the concave angles of the neighbouring mountain, and of equal dimensions, whether they be separated by an extensive plain or a small valley. I have also remarked, that the opposite are almost always of the same height; and that mountains for the most part occupy the middle of continents, islands and promontories, and that they divide them by their greatest lengths. By tracing the courses of the principal rivers too, I find that their direction is nearly perpendicular to the sea-coasts into which they empty themselves, and that for the greater part of their courses they follow the direction of the mountains, whence they take their rise. The sea-coasts are generally bordered with earth and sand accumulated by the waters of the sea, or swept down by rivers. In opposite coasts seperated only by small arms of the sea, the different strata are of the same materials. Volcanoes never exist but in high mountains; a great number of which are entirely extinguished; some are connected with others by subterraneous passages, and their eruptions frequently happened at the same time. Similar communications subsist between certain lakes and seas: and some rivers disappear on a sudden and seem to precipitate themselves into the bowels of the earth. There are certain inland seas also, which constantly receive from rivers prodigious quantities of water, and which as their bounds are not augmented, probably discharge those extraneous supplies by subterraneous passages. Countries that have been long inhabited may likewise be easily distinguised from those which are less so, from their rude appearance and uncultivated state.

In our examination of the upper stratum of the earth, we find it to be universally of the same substance, which is nothing else but a composition of the decayed parts of animal and vegetable bodies. Penetrating a little deeper, we discover the real earth, beds of sand, lime-stone, clay, shells, marble, gravel, chalk, &c. These strata are always parallel to one another, and of the same thickness thoughout. In neighbouring hills, strata of the same materials are uniformly divided by perpendicular fissures. Shells, skeletons of fishes marine plants, &c. perfectly similar to those of the ocean, are often found in the bowels of the earth, and on the tops of mountains at a very great distance from the sea. Petrified shells are found almost every where in prodigious quantities, not only inclosed in rocks of marble and lime-stone, in earths and clays, but incorporated and filled with the same substance with which they are inclosed. Indeed all marble, lime-stones, chalks, marles, clays, sands, and almost all terrestrial substances, are full of shells and other spoils of the ocean.

The changes which the earth has undergone for the last two or three thousand years, are inconsiderable, when compared with those revolutions which succeeded the creation. For as the surface of the earth was at first much softer than it is now, of consequence the same causes which at present produce but slight alterations for many centuries, were then capable of producing very great revolutions in a few years. It is very evident, in my opinion, that the dry land, and even summits of the highest mountains, were formerly covered with the waters of the sea; because shells and other marine animals are still found upon the very tops of mountains. It appears too that the waters of the sea have remained a great number of years upon the surface of the earth; for such immense banks of shells have been discovered, as to render it impossible for so great a number of animals to have existed at the same time. This circumstance proves pretty clearly, that, though the materials on the surface of the earth, were then easily disunited by the water, yet these transportations could not be suddenly effected. Even though it should be supposed, that, at the deluge, all the shells were transported from the bottom of the ocean and deposited upon the dry land; yet, besides the difficulty of establishing this hypothesis, it is evident, that as shells are found incorporated in marble, and in the rocks of the highest mountains, we must likewise suppose that all these marbles and rocks were formed at the same time, and that too when the deluge took place; and that before this grand revolution, there were neither mountains, nor marbles, nor rock, nor clays, nor matter of any kind like that with which we are now acquainted.

But without dwelling any longer upon this particular, I shall confine myself to well authenticated facts. It is certain, that the waters of the sea have, at one period or other, continued for a succession of ages upon what we now know to be dry land; and that, of consequence, the vast continents of Asia, Europe, Africa, and America, were then the bottom of an immense ocean, replete with every thing which the present one produces, and must, therefore, have

Astronomers tell us, that this earth which we inhabit forms but a very minute part in that great assemblage of bodies of which the world is composed. It is a million of times less than the sun, by which it is enlightened. The planets also, which, like it, are subordinate to the sun's influence, exceed the earth one thousand times in magnitude. These have been discovered as forming, with our earth, a system of bodies circulating round the sun, all obedient to one law, and impelled by one common influence.

Modern philosophy has taught us to believe, that, when the great Author of Nature began the work of creation, he chose to operate by second causes; and that, suspending the constant exertion of his power, he endued matter with a quality, by which the universal economy of nature might be continued without his immediate assistance. This quality is called attraction; a sort of approximating influence, which all bodies, whether terrestrial or celestial, are found to possess; and which in all increases as the quantity of matter in each increases. The sun, by far the greatest body in our system, is, of consequence, possessed of much the greatest share of this attracting power; and all the planets, of which our earth is one, are, of course, entirely subject to its superior influence. Were this power, therefore, left uncontrouled by any other, the sun must quickly have attracted all the bodies of our celestial system to itself; but it is equally counteracted by another power of equal efficacy; namely, a progressive force which each planet received when it was impelled forward by the divine Architect upon its first formation. The heavenly bodies of our system being thus acted upon by two opposing powers; namely, by that of attraction, which draws them towards the sun; and that of impulsion, which drives them straight forward into the great void of space; they pursue a track between these contrary directions: and each like a stone whirled about in a sling, obeying two opposite forces, circulates round its great centre of heat and motion.

In this manner, therefore, is the harmony of our planetary system preserved. The sun, in the midst, gives heat, and light, and circular motion to the planets which surround it. Though we see the greatness and wisdom of the Deity in all those worlds around us, it is our chief concern to trace Him in that which we inhabit. The examination of the earth, the wonders of its contrivance and formation, are the proper business of the Natural Historian.

THE

HISTORY OF THE EARTH.

CHAP. I.

OF THE EARTH—ITS FORM AND COMPOSITION—OF ATTRACTION—REPULSION—ELEMENTS—HEAT—AIR—WATER.

THE æra at which the matter of this earth was called into existence, and actuated with motion, seems to be for ever hidden from the curiosity of mankind. The holy scriptures record the creation of the world, in general language, implying rather that it had, indeed, a beginning than that it began to exist at any particular time. History, sacred or profane, carries us backward, through an unbroken series of consequences still arising out of their proper causes, but for the space of a few thousand years. Philosophy, observing, calculating, and commemorating the appearances and revolutions of the heavenly bodies, to the system of which this orb belongs; or penetrating into the bowels of the earth, and the depths of the ocean, to trace the irregular disposition of these strata, and the strange confusion in which their materials are often intermingled together; may amuse us with suggestions, that these spheres have continued to roll through countless myriads of ages; that this or that series of phænomena accompanied the production of the earth into its present form; but, has been hitherto unable to enlarge the testimonies of recorded history, or to refute its authority, concerning the origin of things, with any demonstrative, or decisively satisfactory evidence. Our present business shall be to state such facts as have received general approbation, and to adduce such others as cannot fail to give the reader pleasure and satisfaction.

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The surface of this globe presents us with heights, depths, plains, seas, marshes, rivers, caverns, gulfs, volcanoes, in the disposition of which, upon a slight view, we observe neither regularity nor order. If we penetrate into the bowels of the earth, we discover metals, minerals, stones, bitumens, and in short, matter of every kind as it were without any apparent design. Upon a more accurate inspection we perceive matter in every form, blended in a chaos of confusion, which can be compared to nothing but the ruins of a world.

Amid these ruins, however, the different generations of animals, and of vegetables succeed each other in a beautiful and regular order. With respect to us, the earth, formerly a chaos, is now become a delightful habitation, where every object affords amazing displays of the power, of the intelligence, and of the beneficence of its great Creator.

In examining and describing the surface of the earth, the first object which solicits our attention is that body of water with which the greater part of the globe is covered.

When we explore the bottom of the sea, we discover hills and valleys, plains and hollows, and rocks and earths of every sort. We discover that islands are only the summits of vast mountains; we likewise find other mountains whose tops almost reach the surface of the water; and rapid currents which counteract the general movement; and of which the motion is sometimes in the same direction, and at other times retrograde. On the one hand we meet with tempestuous regions, where the heavens and the ocean seem equally confounded in the general shock; violent intestine emotions, tumultuous swellings, water-spouts, and strange convulsions produced by volcanoes, and dreadful whirlpools. On the other hand, we discover vast regions always calm, but equally dangerous to the mariner. In short, when we direct our eyes towards the polar regions, we perceive huge masses of ice, which having detached themselves from them, advance, like floating mountains, till they dissolve in the temporate climates.

But when we take a view of the land: what a difference takes place in different climates! what a variety of soil! what inequalities in the surface! Yet from attentive observations we find great chains of mountains lie nearer the equator than the poles; that, in the old Continent, their direction is more from east to west than from north to south: and the figures and direction of these mountains which appear most

Those vast chains of mountains which run from west to east in the old continent, and from north to south in the new, must have been formed by the general motion of the tides. But the origin of smaller mountains and hills may be ascribed to particular motions occasioned by winds, currents, and other irregular agitations of the sea, or to a combination of all those motions which are capable of infinite variations.

But how has it happened that this earth, which, from time immemorial; has been an immense continent, should, if formerly the bottom of an ocean, be now so much elevated above the waters, and so completely separated from them.

A little reflection will furnish us with at least plausible solutions. We daily observe the sea gaining ground on certain coasts, and losing it on others. The ocean has a general and uniform motion from east to west; there are whole provinces which human industry can hardly defend from the fury of the waves, and their are islands which have but lately emerged from the waters, and regular inundations. History too informs us of inundations and deluges of a more extensive nature. Should not all this convince us, that the surface of the earth has undergone very great revolutions and that the sea may have given up the greater part of the ground which she formerly possessed? Let us suppose, for example, that the old and new worlds were formerly but one continent, and that, by a violent earthquake, the ancient Atlantis of Plato was sunk. What would be the consequence? The sea would rush in from all quarters, and from what is now called the Atlantic Ocean, and vast continents would of consequence be left dry. This great revolution might be effected by the sudden failure of some immense cavern in the interior part of the globe, and an universal deluge would infallibly succeed. I am inclined however to think, that to effect such a revolution would require a very long period. Be these conjectures as they may it is certain that the revolution has happened It is a well-authenticated fact, that the ocean has a constant motion from east to west; which motion, like the trade-winds, is not only perceived between the tropics, but though the whole temperate climates, and as near the poles as navigators have approached. In consequence of this motion, the Pacific Ocean must make continual efforts against the coasts of Tartary, China, and India; the Indian Ocean must act against the east coast of Africa, and the Atlantic must operate in a similar manner upon the eastern coasts of America. Hence the sea has gained, and will always gain on the east, and lose on the west. If such is the natural effect of the motion of the sea from east to west, may we not suppose that Asia, and all the eastern continent, is the most ancient country in the world? and that Europe and part of Africa, particularly the west parts of the continents, Britain, France, Spain, &c. are more recent countries? Both history and physics concur to establish this hypothesis.

But there are many lands lower than the level of the sea, and defended only by banks, which the action of the waters must gradually destroy, and of consequence the lands must then become part of the ocean. The mountains too are daily diminishing; and every little brook carries earth, and other materials, from the high grounds into the rivers, by which they are at last transported to the ocean. Thus the bottom of the sea is gradually filling up, and the surface of the earth is approaching to a level.

We shall give a detail of facts, in order to explain the different alterations which the earth has undergone, whether by iruptions of the sea upon the land, or by the sea returning from lands it formerly occupied.

That irruption which gave birth to the Miditerranean is no doubt the greatest. The motion through the straits of Gibralter is contrary to the motion in every other strait; for the general motion of the sea is from east to west; but in the straits of Gibralter it is from west to east. This circumstance is a clear proof that the Mediterranean Sea is not an ancient gulf, but that it has been formed by an irruption, produced by some accidental cause.

When the ocean forced this passage, it ran through the straits with much more rapidity than it does now, and immediately deluged that large tract of land which formerly joined Europe with Africa. The waters covered all the grounds which were lower than the level of the ocean; and no part of them is to be seen at present, except the tops of some of the mountains, such as part of Italy, Sicily, Malta, Corsica, Sardinia, Cyprus, Rhodes, and the islands of the Archipelago.

We will now give some recent examples of the changes of sea into land and of land into sea. At Venice, the bottom of the sea is constantly rising. And the same thing may be said, of most harbours, bays, and mouths of rivers. In Holland the bottom of the sea is elevated in many places, the gulf of Zudovzee and the straits of the Texel, cannot receive such large vessels as formerly; and it is quite evident that the sea is always dammed up, wherever great rivers empty themselves. The Rhine is lost in the sands which itself has accumulated, The Danube, the Nile, and all large rivers after they have transported great quantites of slime, sand &c. never arrived at the sea by a single channel. Marshes are drained every day; lands, forsaken by the sea, are plowed and sown; and we navigate whole countries now covered by water. In short, we see so many instances of this nature, that they are sufficient to convince us, that in time, the gulfs of the ocean will become continents; isthmuses changed into straits; and the tops of mountains converted into shoaly rocks in the sea.

Still, however, those perpendicular fissures, which are equally diffused through rocks, clays, and every constituent part of the globe. remain to be considered. The perpendicular fissures are indeed placed at greater distances from one another, than the horizontal; and the softer the matter, the more distant are the fissures. In marble and hard stone, the fissures are only a few feet asunder. If the mass of rock be extensive, the distance between the fissures is some fathoms.

The cause of perpendicular fissures is easily investigated. As various materials constituting the different strata were transported by the waters and deposited in the form of sediments, they would at first be in a very diluted state, but by degrees would harden and part with the water they contained. In the process of drying, they would contract and split at irregular distances, The contraction, therefore of the parts in drying, is the cause of perpendicular fissures; for I have often remarked, that the sides of those fissures, through their whole extent, correspond as exactly as the two sides of a split piece of wood.

Perpendicular fissures vary greatly as to the extent of their openings. It is clear, however, that the fissures, whose openings are small, have been occasioned solely by drying. But those which extend several feet are partly owing to the sinking of the foundation upon one side while that of the other remains firm. When rocks are founded on clay or sand, they sometimes slip a little to a side; and the fissures are of consequence increased by motion. I have not taken notice of those prodigious cuts which are found in rocks and mountains, and which could be produced by nothing but the sinking of immense subterraneous caverns that were unable to support the load any longer. But these cuts in mountains are not of the same nature with perpendicular fissures: they appear to have been ports opened by the hand of nature for the communication of nations. This appears to be the intention of all large openings in chains of mountains, and of those straits by which different parts of the ocean are connected; as the straits of Thermopyle, of Gibraltar, &c. the gaps or ports in Mount Caucasus, the Cordeliers, &c.

These great sinkings, though owing to accidental and secondary causes, are leading facts in the history of the earth, and have contributed much to change the appearance of its surface. Most of them have been produced by subterraneous fires, whose explosions give birth to earthquakes and volcanoes. But though the force of inflamed matter pent up in the bowels of the earth be great, and though its effects appear to be prodigious, we cannot suppose that these subterraneous fires are only branches of an immense abyss of flame in the center of the earth: nor do we believe that those fires have their seat at a great depth below the surface, as matter cannot begin to burn, or at least the inflamation cannot be supported without air. In order to be convinced that the matter emitted by volcanoes does not come from any considerable depth, we have only to attend to the height of the mountain, and to consider the amazing force which would be necessary to project stones and minerals to the height of half a league; for Ætna, Hecla, and other volcanoes, have at least that elevation.

This, however, is not inconsistent with volcanoes being the cause of considerable earthquakes; nor does it contradict the communication of one volcano with another, by means of subterraneous passages. For to produce an earthquake in a plain, it is not necessary that the bottom of the volcano should be below the level of the plain, nor that there should be subterraneous cavities filled with the same burning matter under it. A violent explosion may by its reaction produce an earthquake of considerable extent. I would not, however, be thought to say that no earthquakes derive their existence from subterraneous fires; all I mean is, that there are earthquakes produced solely by the explosion of volcanoes.

It is not difficult to account for volcanoes appearing only in mountains; for greater quantities of minerals, sulphur, and pyrites, exist in mountains, and nearer the surface than in the plains. Besides, mountains are more subject to the impressions of the air, and receive more rain and moisture, by which mineral substances are capable of being fermented to such a degree as to produce actual inflammation. And mountains having diminished, nearly in proportion to the quantity of matter thrown out, is another proof that the volcanoes are not so deep as the base of the mountains, and even that they are not much below the summit.

In several places, earthquakes have formed considerable hollows, and even some large gaps in mountains: hence it is easy to perceive how much subterraneous fires have contributed to change both the surface and internal part of the globe.

It is also well known that the winds raise mountains of sand in Arabia and Africa; and that they frequently carry these sands many leagues into the sea, where they form banks, downs, and even islands. Every body knows that hurricanes are the scourge of the Antilles, of Madagascar, and of other countries, and that their impetuosity is so violent as to drive back rivers, to overthrow rocks and mountains, to scoup out holes and gulphs in the earth, and totally to change the face of those unhappy countries which they infest.

But the greatest changes upon the surface of the earth are produced by rains, rivers, and torrents from the mountains. These derive their origin from vapours raised by the sun from the surface of the ocean, and which are transported by the winds through every climate. The progress of these vapours is interrupted by the tops of the mountains, where they accumulate into clouds and descend in the form of rain, dew, or snow. By their intrinsic gravity, they run to the bottom of the mountains, and penetrating or dissolving the lower grounds, they sweep along with them sand and gravel, furrow the plains, and thus open passages to the sea, which always gains as much water by rivers, as it loses by evaporation. The windings in the channels of rivers uniformly have corresponding angles on their opposite banks; and, as mountains and hills, which may be considered as the banks of the vallies by which they are seperated, have also sinuosities with corresponding angles, this circumstance seems to demonstrate; that the vallies have gradually been formed by currents of the ocean, in the same manner as the channels of rivers have been produced.

The greatest part of the water so liberally diffused through low grounds comes from the neighbouring hills and eminences. During great rains, or the sudden melting of snow, part of the water runs upon the surface, but most of it penetrates the earth and rocks by small chinks and fissures. It emerges indeed as soon as it can find an opening; but it often creeps along until it can find a bottom of clay, or hard earth, and there forms subterraneous lakes, brooks, and perhaps rivers, whose channels are consigned to eternal oblivion.

There are several lakes which neither receive nor give origin to any river. A greater number, however, receive no considerable river, but are the sources of the largest in the world. Such are the lakes from which the river St. Laurence arises; the lake Chiame, from which two large rivers proceed, that water the kingdoms of Asem, and Pegu; the lakes of Assiniboil in America; those of Ozera in Muscovy; those too which give rise to the Bog and the Irtis, and many more. It has been affirmed, indeed, that lakes are to be found on the tops of the highest mountains; but those found on the Alps, and other elevated situations, all derive their origin from the water which run down the sides, or are filtered through the bowels of these superior eminences.

From what we have advanced, we may conclude, that the flux and reflux of the ocean have produced all the mountains, valleys, and other inequalities on the surface of the earth; that currents of the sea have scooped out the valleys, elevated the hills, and bestowed on them their corresponding directions; that the waters of the ocean too, by transporting and depositing earth, &c. have given existence to the parallel strata; that the waters from the heavens destroy the effects of the sea, by diminishing the height of the mountains, filling up the vallies, and choaking the mouths of the rivers; and by reducing every thing to its former level, they will restore the earth to the sea, which, by its natural operations, will again create new continents, beautifully diversified with mountains and vallies, and in every respect like those which we now inhabit.

As there is so large a portion of the globe with which we are unacquainted, particularly near the poles, where the ice has never permitted any navigator to penetrate, we cannot exactly know the proportion between the surface of the earth and that of the sea; only as much as may be judged by inspection of what is known, there is much more sea than land.

If we would have an idea of the enormous quantity of water which the sea contains, let us suppose one common and general depth to the ocean; by computing it only at 200 fathom, or the 10th part of a mile, we shall see that there is water sufficient to cover the whole globe to the height of 600 feet of water, and if we would reduce this water into one mass, we shall find that it forms a globe of more than 60 miles diameter.

The form of the earth is not that of a perfect globe, but rather what is termed a spheroid, a globe which is flattish at the poles, the axis, therefore, or line, which may be supposed to pass through it at the equator, is to its axis at the poles in the proportion of 230 to 229. The solid parts of the earth are formed of beds or strata of different materials, which lie one upon another in a regular order. The first stratum consists of common soil, mixed with a variety of decayed vegetable and animal substances, and with stony and sandy particles. In different parts of the world the other strata are found to consist of different materials, and differently disposed. In some parts the strata are horizontal, in others they are inclined; and veins or fissures of metals, coals, and other minerals, frequently penetrate through the different beds of strata to a great depth, and divide them.

Within a trench made at Amsterdam, the earth was dry to the depth of 230 feet, and the strata were found as follow: 7 feet of vegetable or garden earth, 9 of turf, 9 of soft clay 8 of sand, 4 of earth, 10 of sand on which it is customary to fix the piles which support the houses of Amsterdam; 2 of argile, 4 of white sand, 5 of dry earth, 1 of soft earth, 14 of gravel, 8 argile, mixed with earth; 4 of gravel, mixed with shells; 102 of clay, and 31 of sand; at which depth they ceased digging.

Every stratum, whether horizontal or inclined, is of an equal thickness throughout. In the quarries near Paris, beds of good stone are scarcely 18 or 20 feet thick; in those of Burgundy they are much thicker. It is the same with marble, the beds of the black and the white, are thicker than those of the coloured.

In a soil where flint is the predominant stone, the country is generally fertile; and if the place is uncultivated, and these stones have been long exposed to the air, without being moved, the uper superficies is always very white, whilst the opposite side which touches the earth, preserves its natural colour. If the blackest, and most flinty flint be exposed to the weather, in less than a year, its surface will change colour, and if we have patience to pursue the experiment we shall perceive it to lose by degrees its hardness, transparency, and other specific characters, and approach every day nearer and nearer the nature of argile.

What happens to flint, happens to sand; each grain of sand may be considered as a small flint, and each flint as a mass of sand, extremely fine and exactly grained. The example of the first degree of decomposition of sand, is found in the brilliant and opake powder called *Mica*, in which potters earth and slate are always diffused. The perfectly transparent flints, the *Quartz*, produced by decomposition, fat and soft talc, as petrifiable and ductile as clay: and it appears to me, that talc is a mediate term between glass or transparent flint and argile; whilst on the contrary, course and impure flint, by decomposing, passes to potters earth without any intermedium.

Our factitious glass proves also the same alterations: it decomposes in the air, and perishes in some degree by remaining in the earth. At first its superficial scales exfoliate; by working it, we perceive brilliant scales fly from it; but when its decomposition is more advanced, it crumbles between the fingers, and is easily reduced into a very fine, white, talcy powder: art has even imitated nature in the decomposition of glass and flint.

CHAP. II.

OF HILLS—SEAS—RIVERS—AND LAKES—THEIR NATURE AND PROPERTIES.

If, in place of that beautiful variety of hills and vallies, of verdant forests, and refreshing streams, which at present delight our senses, the earth were an even and regular plain; a dreary ocean would then cover the whole globe, and it would be merely the habitation of the scaly race.

It cannot therefore be supposed, that even at first the surface of the earth was perfectly regular; and since its first production, a variety of causes, the motion of the waters, the subterraneous fires, the wind, and other external causes, have contributed much to this irregularity.

Next to the elevation of mountains, the depths of the ocean form the greatest irregularities; this depth is very different even at great distances from land; it is said there are parts above a mile deep, but these are few. The most general profundities are from 60 150 fathoms. Gulfs bordering on the coasts are much shallower, and straits have generally the least depths.

In general, the depths increase or diminish pretty regularly, being for the most part deeper the farther from land. But there are places in the middle of the sea, as at the Abrolkos in the Atlantic, where large shelves appear; and in other places, there are vast sand banks, to which the East Indiamen are no strangers. Along coasts also the depths are very irregular; yet it may be laid down as a certain rule, that the depth is always proportioned to the height of the coast; the same remark is applicable to rivers.

The highest mountains in Asia are Mount Taurus, Imaus, Caucasus, and the mountains of Japan; all of which are higher than any in Europe. The highest mountains in Africa, *i. e.* the great Atlas, and the mountains of the moon, are at least as high as those in Asia; and the highest of all are in South America, particularly those of Peru, which are more than 3000 fathoms higher then the level of the sea. In general, the mountains between the tropics are loftier than those of the temperate zones, and these more than those of the frigid zones; so that the nearer we approach the equator, the greater are the inequalities of the earth, which with respect to us, are not very considerable when compared with the rest of the globe. Three thousand fathoms difference to 3000 leagues diameter, is one fathom to a league, or one foot to 2300 feet, which on a globe of 2 feet and a half diameter, does not make the 6th part of a line. Hence this earth, which appears to us so crossed and cut by the enormous heights of the mountains, and the frightful depths of the sea, is, when we consider its size, so very slightly furrowed with irregularities, that they can make little or no variation on its natural figure.

Upon the continents the mountains are continued, and form chains. In islands they appear to be more interrupted and isolated, and generally raised above the sea, in form of a cone or pyramid, called peaks. The peak of Teneriffe is one of the highest mountains on the earth; being nearly a mile and a half above the level of the sea; the peak of St George in one of the Azores, and the peak of Adam in the island of Ceylon, are also very high. All these peaks are composed of rocks, piled one upon another, and emit from their summits, fire, cinders, bitumen, minerals, and stones, There are even islands which are only the tops of mountains as St Helena, Ascension, most of the Azores, and Canaries and we must remark, that in most of the islands, promontories, and other projecting lands, the middle is always the highest, that they are generally separated by chains, of mountains, which divide them in their greatest length, as the Grampian mountains in Scotland, which extend from east to west, and divide Great Britain into two, parts; it is the same with the islands Sumatra, Lucon,, Borneo, Celebes Cuba, and St Domingo, and also Italy, which is traversed through its whole length by the Appenines.

Nothing can be finer, or more exact, than that of Mr. Pope's description of a traveller straining up the Alps. Every mountain he comes to, he thinks will be the last; he finds, however, an unexpected hill rise before him; and that being scaled, he finds the highest summit almost at as great a distance as before. Upon quitting the plain, he might have left a green and a fertile soil, and a climate warm and pleasing. As he ascends, the ground assumes a more russet colour; the grass becomes more mossy, and the weather more moderate. Still as he asscends, the weather becomes more cold, and the earth more barren. In this dreary passage he is often entertained with a little valley of surprizing verdure, caused by the reflected heat of the sun collected into a narrow spot on the surrounding heights. But it much more frequently happens that he sees only frightful precipices beneath, and lakes of amazing depths from whence rivers are formed, and fountains derive their original. On those places next the highest summits, vegetation is scarcely carried on; here and there a few plants of the most hardy kind appear. The air is intolerably cold; either continually refrigerated with frosts. or disturbed with tempests. All the ground here wears an eternal covering of ice, and snows that seem constantly accumulating. Upon emerging from this war of the elements, he ascends into a purer and serener region, where vegetation is intirely ceased; where the precipice, composed entirely of rocks, rise perpendicularly above him; while he views beneath him all the combat of the elements; clouds at his feet, and thunders darting upward from their bosoms below. A thousand meteors, which are never seen on the plain present themselves. Circular rainbows; mock suns; the shadow of the mountain projected upon the body of the air; and the traveller's own image, reflected as in a looking glass, upon the opposite cloud.

There is not an appearance in all Nature that so much astonished our ancestors as the disruptions of hills, which are known by the name of land-slips. These are nothing more than the sliding down of a high piece of ground, disrooted from its situation by subterraneous inundations, and setting itself upon the plain below. In fact, to behold a large upland, with its houses, its corn, and cattle, at once loosened from its place, and floating, as it were, upon the subjacent water; to behold it quitting its ancient situation, and travelling forward like a ship in quest of new adventures; this is certainly one of the most extraordinary appearances that can be imagined; and to a people, ignorant of the powers of Nature, might well be considered as a prodigy. Accordingly, we find all our old historians mentioning it is an omen of approaching calamities. In this more enlightened age, however, its cause is very well known; and, instead of exciting ominous apprehensions in the populace, it only gives rise to some very ridiculous law-suits among them, about whose the property shall be; whether the land which has thus slipt, shall belong to the original possessor, or to him upon whose grounds it has encroached and settled.

A remarkable phenomenon has been observed with respect to rivers, which is, that in the inland parts at a distance from the sea, they, flow in a direct line; but in proportion as they approach their mouths, they assume more of a winding course. In large rivers, there is a considerable eddy along the banks; and the nearer the sea, this eddy is the greater. The surface of the water in rivers is by no means level from bank to bank; on the contrary, the middle of the stream is higher or lower than the water of the sides according to circumstances. When a river swells suddenly by the melting of snow or any other cause, the middle of the stream is sensibly higher than the sides: in one instance the elevation is said to have been as great as three feet. On the other hand, when rivers approach their mouths, the water near the sides is commonly more elevated than that in the middle.

The inundations occasioned by the Nile, than which nothing can be more natural, have long afforded matter for curious and doubtful speculation. It is the rain which falls in Abyssinia and Ethiopia that occasions the swelling of this river, though the north wind must be regarded as the primitive cause. 1st, Because it drives the clouds which convey the rain from the coast of Abyssinia: 2dly; Because by opposing itself to the two mouths of the Nile, it forces the water back against the stream, and thus prevents it from pouring into the sea in too great a quantity: this circumstance may be relied on, for when the wind at the north, suddenly veers to the south, the Nile loses in one day what it gathered in four.

Inundations are generally greatest in the superior parts of rivers; because the velocity of a river uniformly increases until it empties itself into the ocean. But as the theory of running waters is subject to many difficulties, we ought carefully to study the peculiarities of particular rivers.

The greatest rivers of Europe are, the Wolga, the course of which from Reschow to Astracan on the Caspian Sea, is about 650 leagues; the Danube, which runs about 450 leagues, from the mountains of Switzerland to the Black Sea; the Don, from the source of the Sosna, which receives it, to the Black Sea, runs 400 leagues; the Nieper also falls into the Black Sea, after running 350 leagues; and the Duine, which empties itself in the White Sea, runs about 300 leagues.

The greatest rivers of Asia are, the Roanho, which rises at Raja Rilron, and after running 850 leagues, falls into the middle of the gulf of Changi, in the Chinese Sea; the Jenisca, which runs from lake Leling to the northern sea of Tartary, a course of about 800 leagues; the Oby, from Lake Kila to the North sea beyond Waigat's Straits, runs about 600 leagues; the Amour, in East Tartary, has a course of 575 leagues, from the head of the river Kerlon, which falls into it, to the sea of Kamschatka. The river Menan may be measured from the source of the Longmu, which falls into it, to its mouth at Poulo-Condor; the Kian, which runs about 550 leagues, from the source of the Kinxa, which it receives till it discharges itself into the Sea of China; the Ganges, which has a course nearly of the same extent with the Kian; the Euphrates, computing from the source of the Irma, which it receives, runs about 500 leagues; the Indus, which runs about 400 leagues, and falls into the Arabian Sea on the east of Guzarat; and the Sirderoias, which runs about 400 leagues, and falls into Lake Aral.

The greatest rivers of Africa are, the Senegal, the course of which, comprehending the Niger, which is but a continuation of it, and the source of the Gambarou, which falls into the Niger, is about 1125 leagues; the Nile, which rises in upper Ethiopia, runs about 970 leagues. There are others, the courses of which are but little known, as the Zaira, the Coanza, the Couama, and the Quilmanci.

In America, the river of Amazons, runs above 1200 leauges; the river St. Laurence in Canada runs more than 900 leagues; the Missipi runs above 700 leagues; the Plata extends more than 800 leagues, from its mouth to the source of the Parana, which it receives; the Oronoko runs above 575 leagues, if we reckon from the source of the river Caketa, near Pasto, a part of which falls into the Oronoko, and a part runs towards the river of the Amazons; and the Medera which falls into the Amazons extends above 660 leagues.

In the old continent there are about 430 rivers, which fall directly into the ocean, or into the Mediterranean and Black Seas, and in the new continent, scarcely 180 rivers are known, which fall directly into the sea. In this number, however, I have included none but such as are as large as the river Somme in Picardy. All these rivers carry to the sea a great quantity of mineral and saline particles, which they have washed from the different soils through which they have passed. The particles of salt which are known to be easily dissolved, are conveyed to the sea by the water. Some naturalists, and among the rest Halley, have pretended that the saltness of the sea proceeded only from the salts of the earth, which the rivers transport thither. Others assert, that the saltness of the sea is as ancient as the sea itself, and that this salt was created only that it might not corrupt, but it may be well supposed that the sea is preserved from corruption by the agitations of the wind, and the flux and reflux, as much as by the salt it contains; for when it is kept in a barrel, it corrupts in a few days; and Boyle relates that a mariner becalmed for 18 days, found at the end of that time the sea so infected, that if the calm had not ceased, the greatest part of his people on board would have perished. The water of the sea is also mixed with a bituminous oil, which gives it a disagreeable taste, and renders it very unhealthy. The quantity of salt contained in sea water is about 1-40th part, and the sea is nearly equally saline throughout at top as at the bottom, under the line, and at the Cape of Good Hope, although there are several parts, as on the Mosambique Coast, where it is salter than elsewhere. It is also asserted not to be so saline under the Artict Zone, which may proceed from the great quantity of snow, and the great rivers which fall into those seas, and because the heat of the sun produces but little evaporation there, in comparison of that produced in hot climates.

The ocean surrounds the globe without any interruption, and the tour of the globe may be made by passing the point of South America; but it is not yet known whether the ocean surrounds the northern parts of the globe in the like manner: and all mariners who have attempted to sail from Europe to China by the north-east or north-west, have equally miscarried in their enterprises.

The seas which are called Mediterranean, are properly branches from the great ocean, by which they are supplied. Lakes differ from the Mediterranean seas, because they do not receive any water from the ocean; so on the contrary, if they have communication with the seas, they furnish them with water; thus the Black Sea, which some geographers have regarded as connected with the Mediterranean, and consequently as an appendix to the ocean, is only a lake; because, instead of receiving water from the Mediterranean, it suplies it, and flows with rapidity through the Bosphorus into the lake called the Sea of Marmora, and thence through the straits of the dardanelles into the Grecian Sea. The water of the Black Sea is less clear and saline than that of the ocean. No island is to be met with in this sea: tempests are very violent here, and more dangerous than those in the ocean; occasioned from the whole body of the water being contained in a kind of bason, which when agitated has a whirling motion that strikes the vessels on every side with an intolerable violence.

Next to the Black Sea, the greatest lake in the universe is the Caspian Sea, the extent of which, from north to south, is about 300 leages; and from a moderate computation, is scarcely more than fifty broad. This lake receives the Volga, which is one of the greatest rivers in the world; and also some other considerable rivers, as the Keir, the Fay, and the Gempo.

There are lakes, which like pools neither receive nor emit rivers; there are other which do both; and there are some which only receive rivers, as the Caspian Sea and the lake Aral which receive and retain the water of many rivers and the Dead Sea which receeivs the Jordan. In Asia Minor, there is a small lake of the same kind, which receives the water of a river the source of which is near Congi, and like the preceding throws off the water it receives by evaporation. There is one much larger in Persia.[*] There is also a similiar small lake in Greece, and there are some of the same sort both in Africa and America.

The most general and largest lakes, however, are those which, having received another river, or many small rivers, give rise to other great rivers. It is worthy of remark that all lakes from which rivers derive their origin, all those which fall into the course of rivers, and which carry their water to them, are not saline. But almost all those, on the contrary, which receive rivers, without other rivers issuing from them, are saline, which seems to favour the opinion we have laid down on the subject of the saltness of the sea, for evaporation cannot carry off fixed salts, and consequently those which rivers carry into the sea remains in it; and although river water appears to taste sweet, we know that it contains a small quantity of salt, and in course of time the sea must have acquired a considerable degree of saltness, which must still continue to increase. Hence, in my opinion the Black Sea, the Caspian Sea, the lake Aral, the Dead Sea, &c. are become salt.

The lakes which are any way remarkable are, the Dead Sea, the waters of which contain much more bitumen than salt; this bitumen, which is called the Bitumen of India, is no other than the Asphaltum, which has induced some authors to denominate this sea, Lake Asphaltum. The land which borders on this lake contains a great quantity of bitumen, and many have applied the fables of this lake; which the poets feign of the lake Avernus, that no fish could live in it, and that birds which attempted to fly over it were suffocated. But neither of these lakes produce such mortal events; fish live in both, birds pass over them, and men bathe in them without the least danger. A petrifying lake in Iceland, is also mentioned, and the lake Neagh in Ireland, has also the same property of apparently turning wood, &c. into stone; but these petrifications are no other than incrustations like those made by the water of Arcueil.

CHAP. III.

OF TIDES—WINDS, REGULAR AND IRREGULAR—MONSOONS —HURRICANES—WHIRLWINDS—WATER-SPOUTS.

WATER, like every other fluid, remains smooth and tranquil, unless put in motion by some foreign cause. All the waters of the ocean are collected in the lowest places upon the surface of the earth; hence the motion of the sea must proceed from external causes. The chief motion is that of the tides, which rise and fall alternately, and produce a perpetual motion from east to west. These two motions have an unvariable relation to the motions of the moon. During the full and new moons, this motion from east to west is most observable, as well as that of the tides, which ebb and flow upon most coasts, every 6½ hours. It is always high tide when the moon arrives at the meridian; and low tide, when she is at the greatest distance from it, viz. at rising and setting. The motion from east to west is perpetual; because when the tide rises, it pushes an immense body of water from east to west, and the ebbing seems only to be occasioned by a smaller quantity of water which is impelled westward.

This motion is attended with the following circumstances: 1st. It is more apparent at the full and new moon than at the quadratures. It is also more violent in spring and autumn than in any other season; and weakest at the solstices. This is owing to the combined attraction of the sun and moon. 2d, The direction and quantity of this motion is often varied by the winds, particularly by those which blow incessantly from the same quarter. 3d. It is worthy of remark, that when one part of a fluid is moved, the motion is communicated to the whole. During the tides, therefore, a great part of the ocean is put in motion; and the whole ocean, from top to bottom, is agitated at the same time.

In order to throw a little more light upon this subject, let us attend to the causes which produce the tides. We may therefore remark that the moon acts upon the earth by a power called gravity or attraction. This power penetrates the whole globe, and is exactly proportioned to the quantity of matter, and decreases as the squares of the distances increases. Let us now examine what effects this power must produce upon the waters when the moon comes to the meridian of any place. The surface of the water immediately under the moon is therefore nearer that planet than any other part of the earth, consequently that part of the sea must be elevated towards the moon, and the summit of this eminence must be opposite to the moon's center. To produce this eminence, the waters upon the surface, as well as those at the bottom, contribute their share, in proportion to their distances from the moon, which acts upon them in the inverse ratio of the squares of their distances. Hence the surface of this part of the sea is first elevated; the surface of the adjacent parts is also elevated, but not so much; and the waters at the bottom of all these parts are raised by the same cause Thus as the whole portion of water under the moon is raised, the water at a distance, upon which no attraction is exerted, must necessarily rush forward with precipitation to supply the place of those which were drawn towards the moon. It is in this manner that the high tide is produced, which is more or less perceiveable in different coasts, and which agitates the sea not only at the surface, but at the greatest depths. The ebb is a consequence of the natural disposition of the water, which when no longer acted upon by the moon, subsides, and returns to occupy those shores from which it had been forced to retire by an external cause.

Nothing is more irregular in our climates than the courses of the winds; but there are countries where this irregularity does not exist, and others where the wind blows constantly in the same direction.

There are several causes which give rise to the motion of the air, but the most powerful is the sun, which by rarefying it, produces an influx of cold air, which is a heavier fluid, and consequently presses in upon that which is rarefied and light, and produces a stream or current, called wind. In the Torrid Zone, this effect is more uniformly manifest than in other parts of the world. In the regions near the equinoctial, a continual rarefaction, is produced by the sun, and a constant current of air follows that luminary in his progress from east to west. This easterly wind blows so generally in the Pacific Ocean, that ships which sail from Acapulca to the Phillippines, perform a voyage of 2700 leagues in less than two months.

About 28 or 30 degrees on this side of the line, the west winds are equally constant, and for this reason the vessels returning from the West Indies to Europe do not pursue the same route as in going out.

The winds which blow continually for some months are generally followed by contrary winds, and mariners are obliged to wait for that which is favourable to them; when these winds change, a calm or dangerous tempest ensues for several days, and sometimes for a month.

In the Mediterranean, the winds blow from the land towards the sea at the sun's setting, and, on the contrary, from the sea towards the land at its rising. Hence in the morning it is an easterly wind, and in the evening a westerly wind.

On the sea, the winds are more regular than at land, because the temperature of the sea is more equal than that of the land. For the temperature of the latter is altered by a variety, of causes; such as electricity, volcanoes, exhalations from the earth, the explosition of meteors, &c.

In general, on the sea, the east winds and those which come from the poles, are stronger than the west and those which proceed from the equators. On the land, on the contrary, the west and south winds are more or less violent than the east and north winds, according to the situation of the climates.

Contrary currents are often observed in the air; clouds that move in one direction, and others which are higher or lower than the first, proceed in a direction perfectly opposite. This contrariety of motion however does not remain very long, and it is commonly produced only by the resistance of some clouds to the action of the wind, and by the reaction of the direct wind, which reigns solely as soon as the obstacle is removed.

The winds are more violent in mountainous places than in plains; and the higher we ascend, the more the power of the wind increases, until we reach the common height of the clouds, which is about one quarter or one third of a league perpendicular height. Beyond that height, the sky is generally serene, especially in summer, and the wind is said to be even imperceptible on the tops of the highest mountains.

A current of air increases in velocity, like a current of water, where the space of its passage is contracted. The wind, which is but slightly felt in a wide and open plain, becomes violent in passing through a narrow passage between two mountains, or between two lofty buildings; and the point of the most violent action of the wind is above the structures or mountain straits. For the air being compressed by the resistance of these obstacles, has a greater mass, density, and velocity subsisting.

There are winds which may be regarded as peculiar to certain coasts; for example, the south wind is almost continual on the coasts of Chili and Peru. It begins about the 46th degree of south latitude, and extends beyond Panama, which renders the voyage from Lima to Panama much easier than the return. The westerly winds blow almost continually, or at least very frequently, on the Magellanic coasts, and over the environs of the straits of Maire. The north and north-west winds prevail almost continually on the Malabar coast; the north-west wind is also very frequent on the coast of Guinea; and at a certain distance from that coast, in the open sea, we meet with the north-east wind very frequently. The westerly winds reign on the coasts of Japan, in the months of November and December.

On the coast of New Spain in America, and on that of Congo in Africa, land winds reign during the night, and sea winds during the day. At Jamaica, the winds blow from all quarters at once, during the night, which hinder vessels from either landing or setting out but in the day time.

The winds are however more irregular on the land than on the sea, and more irregular in the higher lands than in plains. The mountains not only alter the direction of winds, but they even produce winds, which are either constant or variable according to different causes. The melting of the snow, which is upon the mountains, generally produces constant winds, which sometimes remain very long. The vapours which are stopt by mountains, and which accumulate upon them, produce variable winds, very frequent in all climates. In the straits, on all the projecting coasts, at the extremity and in the environs of all promontories, peninsulas and capes, and in all narrow gulphs, storms are frequent.

All continents are subject to variable winds, which often produce singular effects. In the kingdom of Cassimir, which is surrounded by the mountains of Caucasus, a very sudden reverse of seasons is felt on mount Pirepenjale. In less than an hour's journey on it we pass from summer to winter. A north and a south wind, according to Berner, blow perceptibly within 200 paces of one another. In the peninsula of India, which is traversed from north to south by the mountains of Gate, the extreme heats of summer are felt on one side of the mountain, and all the rigours of winter on the other. The same phenomenon is also observed at Cape Rozalgate in Arabia, and on the island of Ceylon, In Egypt during summer, a south wind prevails which is so hot as to stop respiration ; and it raises so great a quantity of sand, that the sky seems covered with thick clouds. This sand is so fine, and driven with such force, that it penetrates every where, even into the closest coffers. When these winds last several days they occasion epidemical diseases, which are often attended with the most fatal consequences.

The Cape of Good Hope is famous for its tempests, and the singular cloud which produces them. This cloud appears at first only like a small round spot in the heavens, called by the sailors the Ox's Eye, and which I imagine appears so little from its exceeding great height. In Natolia, a cloud similar to the Ox's eye at the Cape, produces the same direful effects. In the sea between Africa and America, especially under the equator and in the neighbouring parts of it, these tempests very often arise ; near the coast of Guinea sometimes three or four of these storms are formed in a day. They are occasioned and announced, like those of the Cape, by small black clouds. The rest of the sky is generally very serene, and the sea calm. The first blast which issues from these clouds is furious, and would sink ships in open seas, if they did not take the precaution to furl the sails. It is principally in the months of April, May, and June, that these tempests are experienced on the Guinea sea, because no regular wind blows there during the season.

All these tempests originate from winds which issue from a cloud, and their direction is either to the north or south, north-east or south-west, &c. But there are tempests called Hurricanes which are still more violent, and in which the winds seem to blow from all the coasts at once, with a circular motion, which nothing can resist. A calm generally precedes these horrible tempests ; but in an instant the fury of the winds raises waves as high as the clouds. Some parts of the sea cannot be approached, because they are continually infested with calms or whirlwinds. The Spaniards have therefore called these places calms and tarnados.

When from a sudden rarefaction, or any other cause, contrary currents of air meet in the same spot, a whirlwind is produced. Perhaps the same effect takes place in another element, and gulphs or whirlpools may be no other than the eddies of the water formed by the action of two or more opposite currents. The Euripus, so famous for the death of Aristotle, alternately absorbs and rejects the watar seven times in twenty-four hours. This gulph is near the Grecian coast. The Charybdis, which is near the strait of Sicily, rejects and absorbs the water thrice in twenty-four hours. We are uncertain, however, with respect to the number of alternate motions in other whirlpools. The greatest known gulph is that of the Norway Sea, which is affirmed to be upwards of twenty leagues in circuit. It absorbs for six hours water, whales, ships, and whatever is near it, and afterwards returns them in six hours.

A waterspout is no other than a whirlwind at sea. The vacuum which is occasioned by the meeting currents makes the waters rise up in the form of a cylinder, or rather of an inverted cone. In the travels of Mr. Thevenot, there is a very minute and curcumstantial account of the formation of a waterspout, though there is reason to suspect that the relation is not without some optical deceptions.

The first, says this celebrated voyager, that we saw, was on the northern coast, between us and the island Quesomo, about a gun-shot from the ship. We directly perceived the water begin to boil on the surface of the sea, about a foot high; it was whitish, and appeared above that height like a thick black smoke, so that it properly resembled some burning straw, which only smoked. It made a noise like that of a torrent which runs with much rapidity in a deep valley. But this noise was mixed with another, similar to the strong hissing of serpents or vipers. A little while afterwards, we perceived something like a dark canal or pipe, which bore a strong resemblance to smoke, ascend towards the clouds, which revolved with great velocity. This pipe appeared to be about the thickness of my finger, and the same noise continued; the duration of this spout was about a quarter of an hour. We then perceived another on the south side of us, which began in the same manner as the preceding. Immediately a third and then a fourth sprung up, both to the west; which appeared like heaps of smoking straw, an were accompanied with the same noise as the first. We afterwards saw three pipes or canals, which descended from the clouds, on these places where the water was raised up, each of which was as broad at the end fastened to the cloud, as the broad end of a trumpet, and resembled the teat of an animal, drawing perpendicularly down by a heavy weight. These canals appeared of a darkish white, and were crooked in some places; and their directions from the clouds to which they were joined to the parts which drew in the water, were very oblique And what is singular, the cloud which the second of these three was fastened to, having been driven by the wind, the canal followed it without breaking or quitting the place where it drew in the water, and passing behind the first canal, they sometimes appeared like St Andrew's cross. At the beginning, they were all about the thickness of my finger; but afterwards, the first of the three increased considerably: and the last which was formed, scarcely remained longer than that which we saw on the north side. The second, on the south side, remained about a quarter of an hour, but the first on that side remained a little longer; and it was this which terrified us the most. At first, its canal was as thick as my finger, afterwards as thick as my arm, then as my leg, and at last as the trunk of a large tree, which a man might compass with his arms. We distinctly perceived water through this transparent body, which assended in a serpentine form. Sometimes it diminished a little in size, sometimes at top and sometimes at bottom; then it exactly resembled a soft tube with some flude matter pressed with the fingers, either at top, to make the liquor descend, or at bottom, to make it ascend. After this, it diminished so much, that it was no thicker than my arm; then it became as thick as my thigh, and again, be came very small. At last, I saw that the elevated water began to lower, and that the end of the canal, which touched it, divided and grew narrower, when a variation of the light removed it from our view.

CHAP. IV.

OF VOLCANOES—EARTHQUAKES—THE FORMATION OF NEW ISLANDS—CAVERNS AND GROTTOES—BOGS AND FENS—CHANGES OF LAND INTO SEA, &c.

BURNING mountains, called Volcanoes, contain in their bowels, sulphur, bitumen, and other materials, which serve as aliment to a subterraneous fire; the effect of which, is more violent than that of gunpowder or even of thunder, A volcano, is a cannon of a very large size, the orifice of which is often more than half a league; and vomits forth torrents of smoke, flame, rivers of bitumen, sulphur, and melted metal, clouds of cinders and stones, and sometimes it ejects enormous rocks to the distance of many leagues. The combustion is so terrible, and the quantity of burnt, melted, calcined, and vitrified materials, which the mountain throws out, so plentiful, that it enters cities, forests, covers the fields an hundred, and sometimes two hundred feet thick, and frequently forms hills and mountains. The action of this fire is so great, and the force of the explosion so violent, that its reaction has been known to shake the earth, agitate the sea, overthrow mountains, and destroy the most solid towns and edifices, to a very considerable distance. The natives of Iceland, imagine, that the roarings of the volcano are the cries of the damned, and its eruptions, the effects of the rage and despair of these unhappy wretches.

All these phenomena, however, are only the effects of fire and smoke. In the bowels of mountains, there are veins of sulphur, bitumen. and other inflammable substances; also great quantites of pyrites, which ferment when exposed to the air, or to moisture, and produce explosions in proportion to the quantity of inflammable matter they contain. A mixture of sulphur, filings of iron, and water, buried at a certain depth in the ground, will exhibit, in miniature, all the appearances of a volcano. This mixture, will soon produce explosions, perfectly similiar to those of burning mountains.

There are three famous volcanoes in Europe, Ætna in Sicily, Hecla in Iceland, and mount Vesuvius, near Naples in Italy. Mount Ætna has burnt from time immemorial; its eruptions are very violent, and the matter it throws out, so plentiful, that it may be dug to the depth of 68 feet; where we meet with marble pavement, and the vestiges of an ancient town, which has been buried under matter ejected from this mount, in the same manner, as the city of Herculaneum has been covered by the matter thrown out of Vesuvius. New mouths of fire were formed in 1650, 1669, and at other times. We can see the flame and smoke of this volcano from Malta, which is about 60 leagues distant; it smokes continually, and sometimes vomits flame and matter of every kind with impetuosity. In 1537, there was an eruption of this volcano, which occasioned an earthquake in Sicily, for 12 days; and overthrew a great number of houses and other structures. It ceased only by the opening of a new mouth, which burnt every thing within five miles of the mountain. The cinders thrown out by the volcano, were so abundant, and ejected with so much force that they were driven as far as Italy; and vessels which had departed to some distance from Sicily, were incommoded by them. Farelli, describes the conflagration of this mountain circumstantially; and says, the foot of it is 100 leagues in circumference.

This volcano, has now two principal mouths, the one narrower than the other, which always smoke; but fire is never seen to issue from them, but during the time of eruptions. It is pretended, that stones are found which it has thrown out to the distance of 60,000 feet.

One of the last, and most violent eruptions of mount Vesuvius, was in the year 1737. The mountain vomited, by divers mouths, large torrents of burning metallic matter, which overflowed the country, and run into the sea. Mons. de Montealegre, who communicated this relation to the Academy of Sciences, observed, with horror, one of these rivers of fire, and saw its course for six or seven miles, till it reached the sea. Its breadth was sixty or seventy feet, its depth twenty five or thirty palms, and in certain bottoms or valleys, 220: the matter was like the scum which issues from the furnace of a forge.

In Asia, as well as in America, there are a great number of volcanoes; but there is nothing worthy of remark in any, except the violence with which some of them emit the burning matter they contain.

Near Fez, in Africa, there is a mountain or rather a cavern called Beniguazevel, which always emits smoke, and sometimes flames. One of the islands of Cape Verd, called the island of Fuogo, is only a large mountain which burns incessantly. This volcano, like the rest, throws out many cinders and stones; and the Portuguese who have attempted several times to erect habitations on it, have been constrained to abandon the project, through the dread of its effects. The Canaries, the Peak of Teneriffe, and some of the highest mountains in the world, throw out fire, cinders, and large stones; from the tops of which, rivulets of melted sulphur flow, which are discernible at a great distance.

The matters which volcanoes throw out, generally come forth in the form of a torrent of melted minerals, which inundates all the invirons of these mountains. These rivers of liquified matters extend even to considerable distances, and when cooled, form horizontal or inclined strata, which for position are like the strata formed by the sediment left by the waters. But it is very easy to distinguish the strata produced by the expansion of matters thrown out by volcanoes, from those which have the sediment of the sea for their origin. 1. Because these strata are not of an equal thickness, 2. Because they contain only matters which are easily perceived to have been calcined, vitrified, or melted, and because they do not extend to any great distance. When coal mines are opened, which are generally met with an argillaceous earth at a great depth, it sometimes happens that these mtters have taken fire. There are even mines of coal in Scotland, Flanders, &c. which have burnt for a number of years. The communication of the air suffices to produce this effect, but the fires which are lighted in these mines, produce only slight explosions, and do not form volcanoes, because all being solid and full in these places, fire cannot be excited, like that of volcanoes, in which there are cavities and void places where the air penetrates, which must necessarily extend the conflagration and augment the action of the fire, to the point in which we see it when it produces the terrible effects we have taken notice of.

There are two kinds of earthquakes, the one occasioned by the action of subterraneous fires, and the explosion of volcanoes, which are only felt at small distances, and at the time when volcanoes act, or before they open. When the matters which form subterraneous fires, ferment, heat and inflame, the fire makes an effort on every side, and if it does not find a natural vent, it raises the earth and forces a passage for itself by throwing it out which produces a volcano, whose effects are repeated, and last in proportion to the quantity of inflammable matters. If the quantity of matters which take fire is not considerable, a commotion or an earthquake may ensue, without a volcano being formed. The air produced and rarefied by the subterraneous fire, may also find small vents, by which it will escape, and in this case there will be only a shock without eruption or volcano. But when the inflamed matter is in a great quantity, and confined by solid and compressed matters, then a commotion and volcano arises; but all these commotions form only the first kind of earthquakes, and can only shake a small space of ground. A very violent eruption of mount Ætna will occasion, for example, an earthquake though the whole island of Sicily; but it will never extend to the distance of three or four hundred leagues. When any new mouths are formed in mount Vesuvius, there are earthquakes at Naples and in the neighbourhood of the volcano: but these earthquakes have never shook the Alps, and are not communicated to France or to other countries remote from the source of the phenomenon.

But there is another kind of earthquake, very different in its effects, and perhaps in its causes. There are earthquakes too which are felt at great distances, and which shake a long course of ground, without any new volcano or eruption appearing.

To understand rightly, what may be the cause of this kind of earthquake, it must be remembered, that all inflammable matter capable of explosion, produces like gun-powder, by inflammation, a great quantity of air; that this air is in a state of very great rarefaction; and that by a state of compression, in which it is found in the bowels of the earth it must produce very violent effects. Let us therefore suppose, that, at a very considerable depth, as at one or two hundred fathoms, pyrites, and other sulphurous matter are to be met with; and that, by the fermentation produced by the filtration of water, or other causes, they inflame. At first, this mater is not disposed regularly by horizontal strata, as the more ancient matter is, which has been formed by the sediments of the waters. On the contrary, they are formed in perpendicular strata, in caverns at the feet of these clefts, and in other parts where the water can act and penetrate. This matter inflaming, will produce a great quantity of air or vapour, the spring of which, compressed in a small space, like that of a cavern, will not shake the earth immediately above, but will search for passages, in order to make its escape. It will, therefore, naturally force its way through those parts, where it meets with the least obstruction and will proceed through the interstices between the different strata, or any channel or cavern through which it can find a passage. This subterraneous air or vapour, will, in its passage, produce a noise and motion proportioned to its force, and to the resistance it meets with. And these effects will continue, till it finds a vent, perhaps in the sea, or till it has diminished its force by being greatly expanded. This explanation, corresponds entirely with the phenomena which are observed respecting earthquakes. They proceed with a wave-like motion, and are felt at different places, not at the same instant, but at different times, in proportion to the distance.

From history we have innumerable instances of the dreadful and various effects of these terrible phenomena. Pliny, in his first book, chap. 84. relates, that in the reign of Tiberius, an earthquake happened, which overthrew twelve towns in Asia; and in his second book he mentions an earthquake which overthrew 100 towns in Lybia. In the time of Trajan, the town of Antiochus, and a great part of the adjacent country, were swallowed up by an earthquake; and in the time of Justinian, in 528, it was again destroyed by a second, with upwards of 40,000 of its inhabitants. And sixty years after, in the time of Saint Gregory, it felt the effects of a third earthquake, with the loss of 60,000 of its inhabitants. In the time of Saladin, in 1182, most of the towns of Syria and Jerusalem were destroyed by the same cause In Calabria and Poh, there have been more of them than in any other part of Europe. In the time of Pope Pius XI, all the churches and palaces of Naples were overthrown, and above 30,000 of its inhabitants killed. 1629, there were earthquakes in Pola, which destroyed 7000 persons; and in 1638, the town of Saint Euphemia was swallowed up; and there remains only a stinking lake in its place. Ragusa and Smyrna were also almost destroyed. There was an earthquake in 1692, which extended into England, Holland, Flanders, Germany, and France; it was chiefly felt on the sea coasts and rivers, and extended to a space of at least 2600 leagues square. On the 16th of June, 1628, there was so horrible an earthquake in the island of St. Michael, that the sea near it opened, and in one place, where it was more than 150 fathoms deep, threw up an island a league and a half long, and upwards of 60 fathoms high.

Another earthquake happened in 1691, which began the 16th of July, and lasted in the island of St. Michael till the 12th of the following month. Tercera, and Fayal, were agitated the next morning with so much violence, that they appeared to move; but these frightful shocks returned only four times; whereas, at St Michael's they did not cease a moment for 15 hours. The islanders having quitted their houses, which they saw fall before their eyes, passed all that time exposed to the injuries of the weather. The air and sea, still more agitated, resounded with a noise like the roaring of a number of wild beasts. Many persons died with the fright, the ships in the ports suffered dangerous shocks; and those which were at anchor or under sail, 20 leagues distant from the islands, sustained great damage.

In the year 1646, the mountain of the island of Machian, split with terrible reports, by an earthquake; and so many fires issued through this opening, that they consumed many negro-yards, and all that were in them. This prodigious crack is still apparent; and is called the path of Machian, because it descends from the bottom like a road hollowed out; but which, at a distance, appears like a path.

At sea, the shock of an earthquake is felt at a considerable distance. M. Shaw, relates, that, in 1721, being on board the Gazelle, an Algerine vessel, mounting 50 guns, three violent shocks were felt one after another, as if a weight of 20 or 30 tons had each time been thrown on the ship. This happened in a part of the Mediterranean which was 200 fathoms deep.

In countries subject to earthquakes, it happens, when a new volcano is formed, earthquakes cease, and are only felt in the violent eruptions of the volcano, as is observed in the island of St Christopher.

New islands are produced, either suddenly, by the operation of subterraneous fires, or slowly, by the accumulated sediments of water. Seneca, informs us, that in his time, the island Therasia, suddenly emerged from the sea; and Pliny relates, that thirteen islands arose all at once from the bottom of the Mediterranean. Upon this subject, however, we have some facts more recent, and less involved in obscurity.

The 23d of May, 1707, at sun-rising, near the same island of Therasia, or Santorini, something was seen like a floating rock in the sea. Some persons, excited by curiosity, approached it, and found this shoal which had issued from the bottom of the sea, to increase under their feet; and they brought with them pumice stone and oysters, which still adhered to its surface. There was a slight earthquake at Santorini, two days before the growth of this shoal; which increased considerably till the 14th of June, without any accident, and was then half a mile round, and from twenty to thirty feet high. The earth was white, and bordered a little on argillaceous, after which, the sea was still more agitated; vapours arose, which affected the island Santorini; and the 16th, 17th, and 18th of July, rocks were seen to issue at one time from the bottom of the sea; which seemed to unite into one. All this was done with a dismal noise, which continued upwards of two months, during which time, the island still kept increasing in circumference and height; and the explosions threw out rocks and stones to the distance of seven miles.

The 10th of October, 1720, near the island Tercera, a very considerable fire rose out of the sea. Mariners having been sent to examine it, they perceived an island the 19th of the same month, which appeared to be covered with fire and smoke, and a prodigious quantity of cinders, as if thrown from a volcano, and accompanied with a noise similar to that of thunder.

The Historian of the French Academy, in relating this event, remarks, that after an earthquake in the island of St. Michael, a torrent of fire appeared between it and the island Tercera, which gave birth to two new rocks; and, the next year, the same Historian gave the following account.

" M. de l'Isle, has informed the Academy of several parti-
" culars, which were communicated to him in a letter, from
" M. de Montagnac, consul at Lisbon, concerning the new
" island among the Azores. On the 18th of September,
" 1721, M. de Montagnac's vessel was moored off the For-
" tress of St Michael; and he procured from the Pilot of the
" port the following intelligence.

" On the 7th of December, 1720, at night, a great earth-
" quake happened in Tercera, and St Michael, which are dis-
" tant about 28 leagues from one another, and a new island
" emerged from the sea. It was, at the same time observed,
" that the island Peak, thirty leagues distant, which ejected
" flames, was extinct; and that a continual thick smoke
" proceeded from the new island, which was distinctly per-
" ceived by M. de Montagnac, as long as he remained in that
" part. The pilot assured him, that he had sailed round the
" island, and approached it as near as he could with safety.
" He sounded, on the south side of it, with a rope of 60 fa-
" thoms; but found no bottom. On the west side, the wa-
" ter appeared to be mixed with white, blue, and green;
" and at the distance of two miles, it seemed to be shallow,
" and boiling. On the north-west, the side from which the
" smoke issued, he found, at 15 fathoms, a bottom of coarse
" sand. He threw a stone into the sea, and at the place
" where it fell, he observed the water boil and mount into
" the air with great velocity; and the bottom was so hot, as
" to melt a piece of suet that had been fastened to the end
" of the plumb line. The pilot, also, observed smoke to is-
" sue from a small lake in the midst of a sandy plain.

" We have since learned from M. Adrien, the French con-
" sul at St Michael, dated March, 1722, that the new island
" is nearly on a level with the water; and that it will pro-
" bably soon disappear.

" From these, and several other facts, it appears, that in-
" flammable bodies exist under the sea, and that they some-
" times produce violent explosions."

On the whole, islands produced by the action of fire, and earthquakes, are but few, and these events are seldom; but there are an infinite number of new islands produced by the mud, sand, and earth, which rivers, or the sea, transport into different places. At the mouths of most rivers, masses of earth, and banks of sand are formed, the extent of which often become considerable enough to form islands of a moderate size. It may also be remarked, that there are very few islands in the middle of the sea, compared with those in the neighbourhood of continents, where the sea formed them, either by retreating from or approaching towards these countries.

Water and fire, the natures of which are opposite; produce, what at least appears to us, similar effects. Water, as has been observed, has produced mountains, and formed islands. There are likewise caverns, clefts, holes, gulfs, &c. some of which owe their origin to subterranean fires, and others to water.

Saint Patrick's cavern, in Ireland, is not so considerable as it is famous. It is the same with the Dog's Grotto in Italy, and with that which throws out fire in the mountain of Beniguuzeval, in the kingdom of Fez.

One of the most remarkable and largest caverns, is that of Antiparos, which is computed to be three hundred fathoms deep; and the grotto appears to be forty fathoms high by fifty broad. It is filled with large, and beautiful stalactites, of various forms, both on the roof and at the bottom.

When the water on the surface of the earth cannot find vent, it forms morasses and bogs. The most famous morasses in Europe, are those of Muscovy, at the source of Tanais; those of Finland, where are the great morasses of Savolax and Enasak. There are also some in Holland, Westphalia, and many other low countries. In Asia, there are the morasses of the Euphrates, those of Tartary, and the Palus Meotidis: but in general, there are fewer in Asia, and Africa, than in Europe. America, may be said to be one continued morass through all its plains; which is a proof of the modern date of the country, the small number of inhabitants, and also of their want of industry.

To give an idea of the quantity of earth, which the rains carry from the mountains into the valleys, we can quote a circumstance related by Dr. Plot; who in his Natural History of Staffordshire, observes, that in his time, at the depth of eighteen feet, several pieces of money coined in the reign of Edward V. had been found; which was a period of two hundred years. Hence this ground, which is boggy, had increased above a foot in eleven years, or an inch and a twelfth every year. We can make a similar observation on trees buried at the depth of seventeen feet, below which, medals of Julius Cæsar have been found: hence, the earth, brought from mountains into plains by currents of water, must considerably increase their elevation.

In the city of Modena, and four miles round, whatever part is dug, when we reach the depth of sixty three feet, and bore five feet deeper with an augur, the water springs out with such force, that a well is filled in a very short space of time. This water flows continually, and neither diminishes nor increases by the rain or drought. What is very remarkable in this ground, when we reach the depth of fourteen feet, we find pavements, and other ruins of an ancient town; as boards, houses, different pieces of mosiac work, &c. Below these, we find the ground very solid which is thought to have never been stirred; yet, below it, we find a moist earth mixed with vegetables: and at twenty six feet, are entire trees, as nut trees, with nuts on them, and a great quantity of branches and leaves of trees. At twenty eight feet depth, we meet with a friable chalk, mixed with many shells; and this bed is eleven feet in thickness; after which, we again meet with vegetables; and thus alternately, chalk and earth mixed with vegetables, to the depth of sixty three feet: at which depth, is a bed of sand mixed with gravel and shells, like those formed on the coasts of the Italian sea. These successive beds of fenny or marshy earth and chalk, are always found in the same order, wherever we dig; and very often the augur meets with great trunks of trees, which it bores through, but with great trouble to the workmen. Bones, coals, flint, and pieces of iron, are also found. Ramazzini, who relates these circumstances, thinks, that the Gulf of Venice formerly extended beyond Modena; and that, perhaps, by the inundations of the sea, this ground has been formed.

It is evident, that considerable changes have taken place on the surface of the globe, not only by the action of fire, but also by water. The sea, from various circumstances, has repeatedly changed its bed. Authors have suspected, that the island of Great Britain was formerly united to the continent of France. On the coasts of France, England, Holland, and Germany, the sea has retreated in many parts. In Italy, a considerable tract of territory has been gained; and Ravenna, which was formerly a sea-port of the Exarques, is no longer a maritime town.

On the mountain of Stella, in Portugal, is a lake, in which the wrecks of ships have been found, notwithstanding this mountain is more than twelve leagues distant from any sea. Sabinus, in his commentaries on Ovid's Metamorphoses, says, that from monuments of history, it appears, that in the year 1460, a whole ship, with its anchors, was found in a mine of the Alps.

CHAP. V.

ANALOGIES BETWEEN ANIMALS AND VEGETABLES—ON THE NATURE OF MAN—OF INFANCY—MANHOOD—EXTENT OF HUMAN LIFE—OF THE SENSES—ANECDOTES ILLUSTRATIVE OF THIS SUBJECT.

AMONG the vast variety of objects in which the surface of this globe abounds, animals hold the first rank, both on account of the relation which they bear to man, and of their superiority over vegetable and inanimated nature. The senses, the figure, and the motions of animals, afford them a more intimate connection with surrounding objects than vegetables possess. The latter, however, from their expansion, their growth, and the variety of parts which compose them, are more intimately related to external objects than minerals or stones, which are perfectly inert, and destitute of every vital principle. It is these number of relations alone which renders the animal superior to the vegetable, and the vegetable to the mineral.

What a variety of springs, of powers, and of mechanical movements, are included in that small portion of matter of which the body of an animal is composed! What a number of relations, what harmony, what correspondence among the different parts! How many combinations, arrangements, causes, effects, and principles, all conspiring to accomplish the same grand design!

But how admirable soever this work may appear, the greatest miracle is not exhibited in the individual. It is in the successive renovation, and in the continued duration of the species, that nature assumes an aspect inconceiveable and astonishing. This faculty of reproduction, which is peculiar to animals and vegetables, must, with regard to us, continue to be so profound a mystery, that we shall probably never be able to investigate it with sufficient accuracy.

Even inanimated bodies have some properties, and the most imperfectly organized matter possesses many relations with the other parts of the universe. We will not assert, how- ~~who~~ever, that matter, under whatever form it appears, is conscious of its existence, and of its relative powers. We shall only say, that being ignorant of the extent of our own connections with external objects, we will not hesitate to pronounce inanimated matter to be infinitely more so. Besides, as our sensations have not the most distant resemblance to the causes that produce them, analogy obliges us to conclude that dead matter is neither endowed with sentiment, sensation, nor even with a consciousness of its own existence.

With inanimated matter, therefore, we have no other relations than what arise from the general properties of bodies, extension, impenetrability, gravity, &c. But as relations purely material make no impression on us, and as they exist entirely independent of us, they cannot be considered as any part of our being. Our existence, therefore, is an effect of organization, of life, of the soul. Matter, in this view, is not a principal but an accessary. It is a foreign covering, united to us in a manner unknown. But in order to give a more perfect idea of the nature of man, let us trace him through the different stages of his existence.

At his birth, he is exposed to a new element, the air. What his sensations are on the admission of this element into the lungs, it is impossible to conjecture; but, from his cries we have reason to believe that they are attended with pain. The eyes of an infant are indeed open, but they are dull, and appear to be unfit for the performance of any office whatever; the outward coat being wrinkled. The same reasoning will apply to most of of the other senses. It is not till after forty days that he begins to smile; nor is it till then that he begins to weep. His former sensations of pain are unacompanied with tears. The size of an infant born at the full time, is twenty-one inches, though some do not exceed fourteen; and generally weighs twelve, and sometimes fourteen pounds. The form of the body and members of a new-born infant are by no means perfect. At the end of three days there generally appears a kind of jaundice; and at that time, there is generally milk in the breast of the infant, which is squeezed out with the fingers. The skull of infants is not completely formed. In the language of the nursery, the head is open in a particular part; that is, the skull bones have not yet grown far enough to meet. In this opening, a palpitation may sometimes be discovered; and the beating of the arteries may always be felt. Above this opening, a species of scurf appears, which is rubbed off with a brush. In this country, infants, as soon as born, are injudiciously and unnaturally laced with bandages, which renders them unable to move a single joint. Nations which we call barbarous, act more rationally in this respect. The Siamese, the Indians, the Japanese, the Negroes, the Savages of Canada, of Virginia, of Brasil, and almost all the inhabitants of South America, lay their infants naked in hanging beds of cotton, or in cradles lined with fur.

Infants sleep much, but their sleep is often interrupted. They ought to have the breast every two hours in the day, and in the night as often as they awake. It is of great importance to keep children clean and dry from their excrements. The American Indians, who cannot change their furs as frequently as we can do our clothes, put under them the dust of rotten wood, and renew it as often as it gets damp. Great evils ensue from the negligence of nurses. Infants are sometimes left to cry for a considerable time, which often occasions diseases, or, at least, throws them into a state of lassitude, which deranges their constitutions. To palliate this they are sometimes put into a cradle and rocked to sleep, which may occasionally derange the stomach and head. Before children are put up into the cradle, we ought to be certain they want nothing, and when they are rocked, it ought never to be with such violence as to stun or stupify them. The eyes of children are always directed towards the light, and if one eye only be directed to it, the other will probably become weak; both eyes ought therefore to be equally shaded, or equally exposed. Squinting is commonly the effect of injudicious treatment in this respect. For the first two or three months the diet of the infant ought chiefly to be confined to its mother's milk.

The eight incisores, or fore-teeth, appear first. They are produced generally by pairs, and from two months old to ten or twelve. The four canini (or dog teeth) appear commonly about the 9th or 10th month. About the close of the first, or in the course of the second year, 16 other teeth appear called molaries, or grinders. In the 5th, 6th, or 7th year, the fore-teeth, and the dog-teeth, and the first six of the grinders naturally shed, and a new set appears. At the age of puberty, or later, the dentes sapientiæ, or wise teeth, appear. Women are said to have fewer teeth than men.

When a child is suffered to cry violently, and too long, it is in danger of a rupture, but the early application of bandages or trusses will frequently remove the complaint.

The frame of infants, are less sensible of cold than during any other season of life. The pulse is strong, and it is therefore fair to conclude, that the internal heat is considerable. Small animals, for the same reason, have more heat than great ones; because the action of the heart and arteries, increases in proportion to the smallness of the animal. Till the age of three years, the life of infants is extremely precarious: in the course of the second or third year, it becomes more certain; and at six or seven, a child has a greater probability of living than at any other period. It is remarked, that of a certain number of children born at the same time, above a fourth die the first year; above a third in two years, and at least one half in three years. By other calculations, it appears, that one half of the children born at the same time are not extinct in less than seven or eight years.

Some young persons cease growing at 14 or 15, while others continue their growth to 22 or 23. In men, the body attains its perfect proportion at the age of 30; and the persons of women, are generally complete at 20. The distance between the eyes, is less in man than in any other creature; in some animals, they are at so great a distance, that it is impossible they should ever view the same object with both eyes at once. Men, and apes, are the only creatures that have eye-lashes on the lower eye-lids; other animals have them only on the upper. The upper eye-lid rises and falls, the lower has scarcely any motion.

The ancients, erroneously, considered the hair as a kind of excrement, and believed, that like the nails, it increased by the lower part pushing out the extremity. But the moderns have discovered, that every hair is a tube, which fills and receives nutriment like the other parts of the body. The roots, they observe, do not turn grey sooner than the extremities, but the whole changes its colour at once. We have known persons, the hair of whose heads has become grey in the short space of a night.

The neck, which supports the head and unites it to the body is much more considerable in most quadrupeds than in man. Fishes, and animals that have not lungs similar to ours, have no neck. Birds, in general, have the neck longer than any other kind of animal.

The human breast is formed in a very different manner from that of other animals; and is larger in proportion to the size of the body. None but man, and such animals as use there fore feet as hands; as monkeys, bats, and squirrels, are found to have those bones called clavicles or collar bones. The breasts of women are larger than those of men, through those of the latter are formed in the same manner; and milk is sometimes found in them as well as in those of women. Birds, and all oviparous animals, have no teats, ; but viviparous fishes, as the whale and the dolphin, have both teats and milk.

Little is known with regard to the exact proportion of the human figure. Some, who have studied after the ancient masters, divide the body into ten times the length of the face, and others divide it into eight. They tell us, that there is a similitude of proportion in different parts of the body; that the hand is the length of the face; and the thumb the length of the nose; that the space between the eyes is the breadth of the eye; that the breadth of the thickest part of the thigh is double that of the thickest part of the leg, and treble the thinnest, &c.

The strength of man is very considerable when matured by practice. We are assured, that the porters of Constantinople carry burthens of nine hundred pounds weight; and Mr. Desaguliers mentions a man, in an upright posture, who, by distributing a certain number of weights in such a manner, that every part of his body bore its share, was able to support a weight of two thousand pounds.

The strength of a man may be farther estimated by the continuance of his labour, and the agility of his motions. Men, who are exercised in running, outstrip horses, or at least continue their speed for a greater length of time. In a journey, after a man and a horse have proceeded together for several days, the former will be fresh when the latter is quite tired. The royal messengers of Ispahan, run thirty-six leagues in fourteen or fifteen hours; and travellers assure us, that the Hottentots out-run lions in the chace; and that the savages who hunt the elk, which is as fleet as a stag, pursue it untill they take it. The civilized man is ignorant of his own strength; he is not sensible how much he loses by effeminacy, and how he might increase it by the habit of vigorous exercise.

To complete our description of man, it will be proper to investigate the human countenance, as it appears among ourselves, when agitated by the passions. In affliction, joy, love, shame, and compasion the eyes are apt to be swelled and, as it were, obscured by an overflow of tears. The effusion of these is always accompanied with a tension of the muscles of the visage, by which there is occasioned an opening of the mouth. At the same time, the natural moisture in the nose becomes more copious, and by internal passages, mixes itself with the lachrymal moisture; which, however, flows only at intervals.

By grief, the two corners of the mouth are lowered the under lip raised, the eye-lids are half closed, and the pupils of the eyes are almost covered: the other muscles of the face are so much relaxed, that the space between the mouth and the eyes is larger than ordinary, and consequently the countenance assumes a lengthened appearance.

Fear, terror or horror, wrinkles the forehead, raises the eye-brows, extends the eye lids as much as possible, and discovers a part of the white of the eye over the pupil, which is lowered, and somewhat concealed by the inferior eye-lid. The mouth, at the same time, is widely opened, and both the upper and under teeth appear.

Contempt or derision, raises the upper lip on one side, and on the other there is a little motion, as if inclined to smile. The nose is shrivelled on the same side on which the lip is raised, and the corner of the mouth is extended. The eye of the same side is almost shut, while the other is open as usual, but the pupil of each is lowered, as when one looks downwards.

By jealousy, malice, and envy, the eye-brows fall down, and are knit; the eye-lids are raised, and the pupils lowered. The under lip is raised on each side, while the corners of the mouth are rather lowered, and the middle of the under lip raised, in order to join the middle of the upper one.

By laughter, the corners of the mouth are extended and somewhat raised; as are the upper part of the cheeks; and the eyes are more or less closed. The upper lip also is raised, while the under is lowered; and, in moderate laughter, the mouth is opened, and the skin of the nose contracted.

Where there is a good natural constitution it is not impossible, but by moderating the passions, temperance, and sobriety, to extend the period of life for a few years. But even of this, there seems to be an uncertainty? for, if it is necessary that the body should employ its whole strength, that it should consume whatever it is capable of consuming that it should undergo every possible exercise, whence could any benefit accrue from regimen, and abstinence? Men, no doubt, there are, who have outlived the usual period of human existence. Not to mention Par, who lived to the age of one hundred and fifty two, and Jenkins, to that of one hundred and sixty nine, as recorded in the Philosophical Transactions; we have many instances of the prolongation of life to one hundred and ten, and even to one hundred and twenty years. Yet. this longevity was owing to no peculiar art or management; for it appears that the greater number of such long livers were peasants, or persons accustomed to the greatest fatigues.

If, in the duration of life, there is any difference to be found, it seems proper to ascribe it to the quality of the air. In elevated situations, old people are more generally found than in low ones. In the mountains of Scotland and Wales, Auvergne, and Switzerland, there have been more instances of extreme longevity than in the plains of Holland, Flanders, Germany or Poland. Human life is, however, nearly the same in every country; accidental distresses excepted. The common verge of existence is, ninety or an hundred years, which has been the case since the days of David, without much variation.

The following table of the probabilities of human life, has been compiled from a careful examination of many country registers of burials in France, compared with the mortality bills of Paris.

TABLE

OF THE PROBABILITIES OF THE DURATION OF LIFE.

Age.	Duration of Life.		Age.	Duration of Life.		Age.	Duration of Life.	
Years.	Years	Months	Years.	Years	Months	Years.	Years	Months
0	8	0	29	28	6	58	12	3
1	33	0	30	28	0	59	11	8
2	38	0	31	27	6	60	11	1
3	40	0	32	26	11	61	10	6
4	41	0	33	26	3	62	10	0
5	41	6	34	25	7	63	9	6
6	42	0	35	25	0	64	9	0
7	42	3	36	24	5	65	8	6
8	41	6	37	23	10	66	8	0
9	40	10	38	23	3	67	7	6
10	40	2	39	22	8	68	7	6
11	39	6	40	22	1	69	6	7
12	38	9	41	21	6	70	6	2
13	38	1	42	20	11	71	5	8
14	37	5	43	20	4	72	5	4
15	36	9	44	19	9	73	5	0
16	36	0	45	19	3	74	4	9
17	35	4	46	18	9	75	4	6
18	34	8	47	18	2	76	4	3
19	34	0	48	17	8	77	4	1
20	33	5	49	17	2	78	3	11
21	32	11	50	16	7	79	3	9
22	32	4	51	16	0	80	3	7
23	31	10	52	15	6	81	3	5
24	31	3	53	15	0	82	3	3
25	30	8	54	14	6	83	3	2
26	30	2	55	14	0	84	3	1
27	29	7	56	13	5	85	3	0
28	29	0	57	12	10			

By this Table, it appears that we may lay our bett one to one, that an infant newly born will live eight years; that an infant of one year will live thirty-three years longer; that an infant of two years will live thirty-eight years longer; that a man of twenty will live thirty-three years and five months longer; that a man of thirty will live twenty-eight years longer; and so proportionally of every other age.

Ideas of external things are conveyed to the soul of man by means of the five senses, seeing, hearing, feeling, tasting and smelling. The organs by which the senses act are the nerves, which are small thread-like fibres distributed over the whole body, and all of them connected with the brain.

Mr Cheselden, having couched for a cataract a lad of thirteen years of age, who had been blind from his birth, and thus communicated to him the sense of seeing, was at great pains to mark the progress of his visual powers. The youth, though hitherto incapable of seeing. was not absolutely and entirely blind. Like every other person whose vision is obstructed by a cataract, he could distinguish day from night, and even black from white, or either from the vivid colour of scarlet. Of the form of bodies, he could distinguish nothing, nor of colours themselves, unless the light was strong. The operation was performed upon one eye; and when he saw for the first time, he was so far from forming the least conception of distances, that he supposed (as he himself expressed it) every thing he saw touched his eyes, in the same manner as every thing he felt touched his skin. The objects that pleased him most, were those the surfaces of which were plain, and the figures regular; though he could neither judge of their different forms, nor give any reason why he preferred the one to the other. The ideas he had entertained of colours, during his former dark state, were so imperfect, that when he saw them in reality, he could hardly be persuaded they were the same. When such objects were shewn him, as he had been formerly familiar with by the touch, he beheld them with earnestness, in order to distinguish them a second time. Of these, however, he had too many to retain at once, of course the greatest number were forgot; and for one thing which he recollected upon seeing a second time, there were a thousand of which he had not the least remembrance. He was very much surprised to find, that persons and objects which he had loved best, were not the most pleasing to the eye; nor could he help expressing his disappointment in finding his parents less handsome than he had conceived them to be. Before he could distinguish that a picture resembled a solid body, above two months elapsed; till then, he only considered it as a surface diversified by a variety of colours: but when he began to perceive that these shadings actually represented human beings, he also began to examine, by the touch, whether they had not the usual qualities of such bodies; and great was his surprise to find what he had imagined a very unequal surface, to be smooth and even. He was then shewn a miniature portrait of his father, which was contained in his mother's watch-case; and though he readily perceived the resemblance, he expressed his astonishment how so large a face could be comprised in so small a compass: to him, it appeared as strange, as that a pint-vessel should contain a bushel. At first, he could bear but a very small quantity of light, and he saw every object much greater than the life: but in proportion as he observed objects that were really large, he conceived the others to be diminished. Beyond the limits of what he saw, he had no conception of any thing: although he knew that the apartment he occupied was only a part of the house, he could not conceive how the latter should seem larger than the former. Before the operation, he had no great expectation of the pleasure he should receive from the new sense he was promised: that by it he might be enabled to read and write, was his grand object. He said, that he could enjoy no greater satisfaction from walking in the garden, with this sense, than without it: because there he already walked at his ease, and knew all the walks.

Distance is only conceived by experience for the more distant an object is, the less it appears. Every man has felt, how liable we are in travelling by night, to mistake a bush which is near for a tree at a distance, or indeed a distant tree for a bush at hand. In the same manner, if we do not distinguish objects by their shape, and if we cannot by it judge of distances, the same fallacy will still continue. In this case a fly, which may pass before us with rapidity, will seem to be a bird at a considerable distance; and a horse which may be in the middle of a plain, and in an attitude similar, for instance, to that of a sheep, will seem to be no bigger than a sheep, till we have discovered that it is a horse.

If therefore, we are benighted in a strange place, where no judgment can be formed of distance, we are every moment liable to the deception of vision. Hence originate the dreadful stories of spectres, and those wonderful, hideous, and gigantic figures, which so many persons have seen. Though such figures, it is commonly asserted, exist solely in the imagination; yet it is highly probable, that they might appear to the eye, in the manner above described.

One of the most common complaints in old age, is deafness; which probaly proceeds from the rigidity of the nerves in the labyrinth of the ear. This disorder also, proceeds from the stoppage of the wax, which art may easily remedy. In order to know whether the defect be internal or external, let the deaf person put a repeating-watch into his mouth; and if he hears it strike, he may be assured his disorder proceeds from an external cause.

It often happens, that people hear better with the one ear than the other; but these have what musicians call, a bad ent. I have made several experiments on persons of this description; and I have uniformly found, that their defect, in judging properly of sounds, proceeded from the inequality of their ears, and from their receiving by both, at the same time, unequal sensations. In like manner, as such persons hear falsely, they will, without knowing it, sing so. They also frequently deceive themselves with regard to the side whence the sound comes, generally supposing it to make its impression on the best ear.

Hearing is a more necessary sense to man than to other animals. In these it is only a warning against danger, or an encouragement to mutual assistance; but in man, it is the source of most of his pleasures; and without it, the rest of his senses would be of little benefit. A man born deaf, must necessarily be dumb; and his whole sphere of knowledge must be bounded by sensual objects. We have a singular instance of a young man who, being born deaf, was restored, at the age of twenty-four, to perfect hearing. The account which is given in the memoirs of the Academy of Sciences, is as follows:

"A young man, of the town of Chartres, between the age of twenty-three and twenty four, the son of a tradesman, and deaf and dumb from his birth, began to speak all of a sudden, to the utter astonishment of the whole town. He gave them to understand that, about three or four months before, he had heard the sound of the bells, and was greatly surprised at his new and unknown sensation. After some time, a kind of humour issued from his left ear, and he then heard perfectly well with both. During these three months, he listened to every thing; and without attempting to speak aloud, he accustomed himself to utter softly the words spoken by others. He also laboured hard to acquire the pronunciation of words, and the ideas of which they were expressive. At length, having supposed himself qualified to break silence, he declared, that he could now speak, though as yet but imperfectly. Soon after, an able Divine questioned him concerning the ideas of his past state; and principally with respect to God, his soul, the moral beauty of virtue, and deformity of vice; but the young man had not directed his solitary speculations into that channel. He had gone to mass with his parents, had learned to sign himself with the cross, to kneel down, and to assume all the grimaces of a man in the act of devotion; but he did all this without knowing the intention of the cause; he saw others do the like, and that was enough for him. He had formed no idea of death, but had led a life of pure animal instinct; and though entirely taken up with sensible objects, and such as were present, he did not seem to have made such reflection even upon these, as might reasonably have been expected. The young man, however, was not deficient in understanding, but the understanding of a man, deprived of all commerce with others, is so very confined, that the mind may be said to be under the controul of its immediate sensations."

It is very possible to communicate ideas to deaf men which they previously wanted; and to give them very precise notions of abstract, and general subjects, by means of signs and letters. A person born deaf may, by time and application, be taught to read, write, and even by the motion of the lips, to understand what is said to him. This is a plain proof, how much the senses resemble and may supply the defects of each other. It is probable however, that as most of the motions of speech are made within the mouth by the tongue; the knowledge, from the motion of the lips, can be but very confined.

The sense of feeling is universal, but it employs itself differently in different parts of the body. The sensation which results from feeling, cannot be excited otherwise than by the contract and immediate application of the surface of some foreign body to that of our own. If we apply a foreign body against the breast, or upon the shoulder of a man, he will be sensible of the impression, but cannot form any idea of its shape; because the breast only touches it in a single plain or surface. It is the same with respect to all other parts of the body, which cannot adjust themselves to the surfaces of foreign bodies, nor bend to embrace, at once, many parts of their superficies. These parts of our body cannot, therefore, give any just idea of their form; but those, on the contrary, which, like the hand, are divided into many small flexible, and moveable parts; and can apply themselves at one and the same time to the different plains of the superfices of the body, are the parts which give us ideas of their form and size.

It is not because there is a greater quantity of nervous tufts at the extremity of the fingers than in any other part of the body; it is not, as is vulgarly pretended, because the hand has the most delicated sense, that it is in effect the principal organ of feeling: for there are parts more sensible, and where the feeling is more delicate, as the eyes, the tongue,

&c. but it is owing to the hand being divided into many moveable parts, all flexible, all acting at the same time, and all obedient to the will, that we acquire distinct ideas of the forms of bodies. Animals, which have hands, appear to be the most acute; thus, apes do things so like the mechanical actions of man, that it seems as if they had the same succession of corporeal sensation for the cause of them; and those which have no hands, nor any part divided and flexible enough to be able to adjust itself upon the superficies of bodies cannot have any precise notion of the form, or size of them. It is for this reason, that we often see them in suspence, or frightened at the aspect of objects which are most familiar to them. The principal organ of feeling is their muzzle, and the tongue serves them to touch bodies, which they turn again and again, before they take them between their teeth.

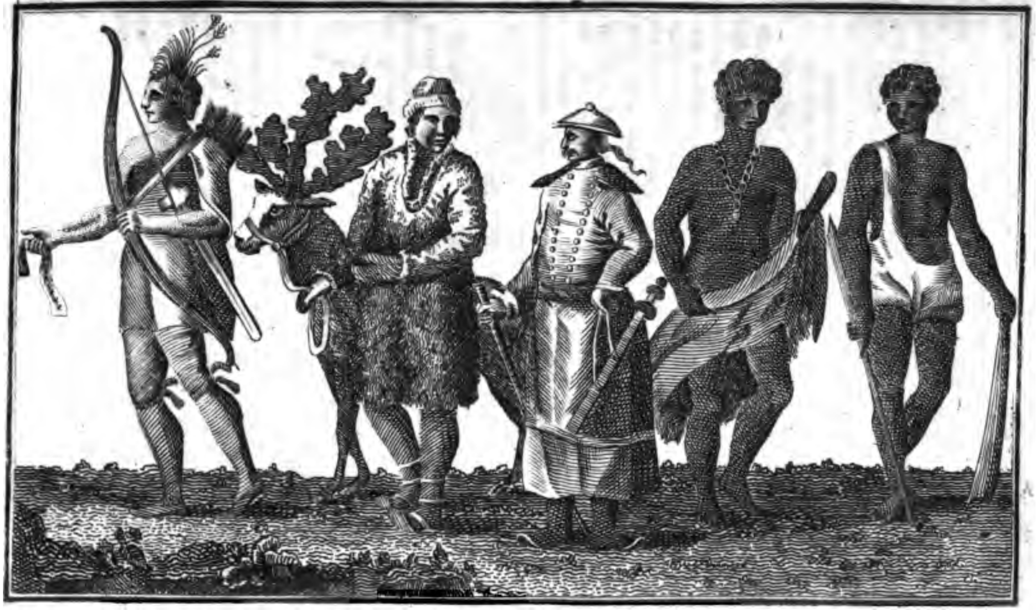
It is therefore to the sense of feeling, that we are indebted for the power of usefully exercising all our other faculties. One man does not, perhaps, possess more ingenuity or capacity than another; but because in his earliest infancy he made a greater and a readier use of this sense. As soon as children are of sufficient age, they manifest a disposition to use their hands, and are fond of touching whatever is presented to them; they amuse themselves by handling every thing they are capable of, and seem as if they were endeavouring to find out their form by touching them on every side.

CHAP. VI.

OF THE APPARENT VARIETIES IN THE HUMAN SPECIES—LAPLANDERS—TARTARS—CHINESE—JAPANESE—FORMOSANS—MOGULS—PERSIANS—ARABIANS—CIRCASSIANS—TURKS—RUSSIANS—NEGROES—HOTTENTOTS—AMERICANS—CAUSES OF THIS VARIETY.

THERE are many causes which contribute to the producing of an apparent variety between the different nations of the globe. Climate, food, manners and customs, produce not only a difference in sentiment, but even in the external form of different people.

Plate 1.



AMERICAN. LAPLANDER. CHINESE. HOTTENTOT. AFRICAN.

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THERE are many causes which contribute to the producing of an apparent variety between the different nations of the globe. Climate, food, manners and customs, produce not only a difference in sentiment, but even in the external form of different people.

In examining the surface of the earth, and beginning our inquiries from the north, we find in Lapland, and in the northern parts of Tartary, a race of small-sized men, whose figure is uncouth, and whose physiognomy is as wild as their manners are unpolsihed. Though they seem to be of a degenerate species, they are very numerous, and occupy vast regions.

The Laplanders, the Danes, the Swedes, the Muscovites, the inhabitants of Nova-Zembla, the Borandians, the Samoeids, the Ostiacs of the old continent, the Greenlanders, and the savages to the north of the Esquimaux Indians of the new continent, appear to be of one common race, which has been extended and multiplied along the coasts of the northern seas, and over deserts, considered as uninhabitable by every other nation. In these countries, the visage is large and broad, the nose is flat and short, the eyes are of a yellowish brown, inclining to black, the eye-lids are drawn toward the temples, the cheek-bones are extremely prominent, the mouth is very big, the lower part of the countenance is very narrow, the lips are thick and turned outward, the voice is shrill, the head is bulky. The hair is black and straight, and the skin is tawny. They are small in stature, and, though meagre, they are of a squat form. In general, their size is about four feet, nor do the tallest exceed four and a half; and among these people, if there is any difference to be found, it depends on the greater or less degree of deformity.

The Danish Laplanders have a large black cat, which they make a confident of all their secrets, and a counsellor in all their difficulties. Among the Swedish Laplanders, there is in every family a drum, for the purpose of consulting the devil: and notwithstanding the natives of these countries are robust and nimble, from many circumstances there is reason to suppose, that they cannot live but in their own country, and in their own manner. In travelling over the ice and snow, they use skates made of fir, which are about two feet long, and about half a foot broad, which are raised and pointed before, and fastened to the foot by straps of leather. With these they make such dispatch, that they easily overtake the swiftest animals. They also use a pole, pointed with iron at one end, and rounded at the other. This pole serves to push them along, to direct their course, to keep them from falling, to stop the impetuosity of their career, and to kill what game they overtake. With their skates they descend the steepest mountains, and scale the most craggy precipices; nor are the women less skilful in such exercises than the men. They are all accustomed to the bow and arrow; and it is asserted, that the Muscovite Laplanders launce a javelin with so much dexterity, that at the distance of thirty paces, they are sure to hit a mark no larger than a silver crown, and with such force, that it will transfix a human body. As huntsmen, their favourite pursuit is that of the ermine, the fox, the lynx, and the martin; and of these animals, they barter the skins for their favourite articles of luxury, brandy and tobacco.

In winter, the Laplanders clothe themselves with the skin of the rein deer, and in summer with the skins of birds. To the uses of linen they are perfect strangers. The women of Nova-Zembla have their nose and their ears pierced, in order to have them ornamented with pendants of blue stone, and also, as an additional lustre to their charms, they form blue streaks, upon their forehead and chin. Those of Greenland dress themselves with the skin of the dog-fish. They also paint the visage with blue and yellow colours, and wear pendants in the ears. They all live under ground, or in huts almost entirely covered with earth, and with the bark of certain trees, or the skin of certain fishes. Some even form subterranean trenches, by which one hut communicates with another, and thus, during the winter months, they enjoy the conversation and society of their neighbours. A continued series of darkness for several months, obliges them to illuminate their dreary abodes with lamps, which they keep alive with that very train-oil they use as drink. Under all these hardships, they are subject to very few diseases, and they live to a prodigious age. So vigorous indeed are the old men, that they are hardly to be distinguished from the young. The only infirmity they experience, and it is an infirmity common to them all, is blindness. Dazzled by the strong reflection of the snow, in winter, and inveloped in clouds of smoke in autumn and spring, when advanced in years, they seldom retain the use of their eyes.

The Tartar country, taken in general, comprehends the greatest part of Asia, and extends even from Russia to Kamtschatka. It is from eleven to twelve hundred leagues long, and about seven hundred broad, of course its circumference is twenty times larger than that of the whole kingdom of France.

All the Tartar nations have the upper part of the visage very large and wrinkled, even in their youth. Their nose, is short and flat; their eyes little, and sunk in the head; their cheek-bones high; the lower part of their visage narrow; their chin, long and prominent with little or no beard; their teeth, long and straggling; their eye-brows, so large as to cover the eyes; their eye-lids, thick; the face, broad and flat; their complexion, tawny; and their hair, black. They have thick thighs, and short legs; and though but of a middling stature, are remarkably strong and robust. The ugliest of them are the Calmoucks, in whose appearance there seems to be something frightful. They are all wanderers and vagabonds; and their only shelter is that of a tent made of hair or skins. Their food is horse, and camel's flesh, either raw or a little sodden between the horse and the saddle: they also eat fish dried in the sun; and their common drink is mare's milk, fermented with the meal of millet. They all have the head shaved, except a tuft on the top, which they let grow, to form into tresses on each side of the face. The women, who are as deformed as the men wear their hair, which they bind up with bits of copper, and other ornaments of the same nature.

The majority of these tribes are strangers to religion, morality, and decency. They are robbers by profession and the natives of Daghestan, who live in the neighbourhood of more polished countries, carry on a great traffic of slaves, whom they carry off by force, and afterwards sell to the Turks and Persians. Their wealth consists chiefly of horses, which are, perhaps, more numerous, than in any other part of the world. They are taught, by custom, to live in the same place with their horses; are continually employed in training and exercising them; and, at length, they reduce them to such implicit obedience, that they actually appear to understand the intention of the rider.

The limbs of the Chinese are well proportioned, their bodies are large and fat, and their visages, large and round. Their eyes are small; their eye-brows, large; their eye-lids turned upwards; their noses, short and flat; upon their chins there is very little hair, and upon each lip their are not more than seven or eight prickles. Those who inhabit the southern provinces of the empire, are more brown and tawny than the others. In colour, they resemble the natives of Mauritania, and the more swarthy Spaniards; but those who inhabit the middle provinces, are as fair as the Germans.

Le Gentel, assures us, that the Chinese women do every thing in their power to make their eyes appear little, and oblong: for this purpose, it is a constant practice with the little girls, from the instruction of their mothers, forcibly to extend their eye-lids; and with the addition of a nose thoroughly compressed and flattened; ears long, large, open, and pendant, they are accounted complete beauties. He adds, that their complexions are delicate; their lips, of a fine vermilion; their mouths, well proportioned; their hair, very black; but that, by the use of paint, they so greatly injure their faces, that before the age of thirty, they have every appearance of old age.

So strongly do the Japanese resemble the Chinese, that we can hardly scruple to rank them in the same class. As being inhabitants of a more southern climate, they only differ from them in being more yellow, or more brown. In general, their stature is small; their faces as well as their noses. are broad and flat; their hair, black; and their beards little more than perceptible. They are haughty, fond of war, full of dexterity and vigour, civil and obliging, smooth-tongued and courteous; but fickle and vain. With astonishing patience, they sustain hunger, thirst, cold, heat, fatigue, and all the other hardships of life. Their ceremonies, or rather grimaces in eating, are numerous and uncouth. They are laborious, very skilful artificers, and in a word, have nearly the same disposition, and the same manners and customs, as the Chinese.

One custom, which they have in common and which is not a little fantastic, is, so to contract the feet of the women, that they are hardly able to support themselves. Some travellers mention, that in China, when a girl has passed her third year, they break her feet in such a manner, that the toes are made to come under the soles; that they apply to them a strong water which burns away the flesh; and then wrap them up in a number of bandages till they assume a certain fold. They add, that the women feel the pain of this operation all their lives, that they walk with great difficulty, and that their gait is, to the last degree, ungraceful. Other travellers do not say that they break their feet in their infancy, but that they only compress them with so much violence as to prevent their growth: yet they unanimously allow, that every woman of condition, particularly every handsome woman, must have a foot small enough to enter, with ease, the slipper of a child of six years old.

ciety. Theft, robbery, and violence, are authorised by their chiefs. They glory in their vices; and of all human conventions, those only have they admitted which owe their existence to fanaticism and superstition.

They are a people much inured to labour; and to it they habituate their horses. They allow this animal to eat or drink but once in twenty-four hours; and though their horses are meagre, they are excellent coursers, and seem indefatigable.

The Egyptian women are very brown; their eyes are lively; their stature is rather low; their mode of dress is by no means agreeable; and their conversation is perfectly tiresome. But though the women of Egypt are commonly rather short, yet the men are of a good height. Both are of an olive colour; and the farther we remove from Cairo, the more we find the people tawny, till we reach the confines of Nubia, where they are as black as the Nubians themselves.

The most inherent defects of the Egyptians are, idleness and cowardice. They do nothing almost the whole day but drink coffee, smoke, and sleep, or chatter in the streets. They are very ignorant, and full of the most ridiculous vanity; and though they cannot deny but that they have lost every thing noble they once possessed; as the sciences, the exercise of arms, their history, and even their language; and that, from an illustrious and valiant nation, they are become a people dastardly and enslaved; and they scruple not to despise other nations, and to take offence at the bare offer to carry their children to Europe, to initiate them in the arts and sciences.

"The women of Circassia," says Struys, "are exceedingly fair and beautiful; their complexions are incomparably fine, their foreheads, large and smooth; and, without the assistance of art, their eye-brows are so delicate, that they appear like threads of silk. Their eyes are large, soft, and full of animation: their mouths small and expressive of a smile; and their chins, perfect ovals. Their necks and breast are admirably formed; their stature is tall, and the shape of their bodies, easy; their skin, is white as snow, and their hair of the most beautiful black. They wear a little cap of black stuff, over which they fasten a roller of the same colour; but, what is truly ridiculous, instead of this roller, the widows wear the bladder of an ox, or a cow, inflated as much as possible, by which they disfigure themselves amazingly. In the summer months, the inferior classes wear nothing but a shift, which is open down to the middle, and generally of a blue, yellow, or red colour. They are tolerably familiar with strangers, but at the same time faithful to their husbands, who are by no means jealous of them."

The Turks, who purchase a vast number of these women as slaves, are a people composed of many different nations. From the Armenians, the Georgians, the Turcomans, intermixing in the times of the crusades, with the Arabians, the Egyptians, and even the Europeans; it is hardly possible to distinguish the native inhabitants of Asia Minor, of Syria, and of the rest of Turkey. The Turkish men are generally robust, and tolerably well made; and it is very rare to find among them persons either hump-backed or lame. The women, in general, are beautiful, well proportioned, and free from blemishes; and when they go abroad, are always veiled.

Before the Czar, Peter I. we are told, that the Muscovites had not emerged from barbarism. Born in slavery, they were ignorant, brutal, cruel, and destitute of courage. Men and women bathed promiscuously in stoves, heated to a degree intolerable to all persons but themselves; and on quitting this warm bath, would plunge, like the Laplanders, into cold water. Their food was homely, and their favourite dishes were cucumbers, or melons of Astracan; which, in summer, they preserved in a mixture of water, flour, and salt. From ridiculous scruples, they abstained from several viands; amongst which were Pigeons and veal. Nevertheless, at this period of rudeness, the women were skilled in the arts of colouring the skin, plucking out the eye-brows, and painting artificial ones. They also adorned themselves with pearls, and jewels; and their garments were made of rich and valuable stuffs. From these circumstances it appears, that the barbarism of the Muscovites was near a close, and that their sovereign would have less trouble in polishing them than some authors have endeavoured to insinuate. They are now a people in some degree civilized and commercial, fond of spectacles, and other ingenious novelties.

From the regions of Europe and Asia, our attention is now to be directed to a race of people differing more from ourselves in external appearance than any we have hitherto mentioned.

In the latitude of seventeen or eighteen degrees north, on the African Coast, the neighbourhood of the ocean, and the Red Sea, we find the Negroes of Senegal, and Nubia. After these, all the nations of Africa, from the latitude of eighteen north to eighteen south, are black; the Ethiopians, or Abyssinians excepted. It appears, then, that that portion of the globe which Nature has allotted this race of men, contains an extent of about nine hundred leagues in breadth, and considerably more in length, especially northward of the equator. Beyond the latitude of eighteen or twenty, there are no Negroes, as will appear when we come to speak of the Caffres, and the Hottentots.

By confounding the Ethiopians with their neighbours the Nubians, we have long been in an error with respect to their visage and colour. Marmol, says, they are absolutely black, their visages, large; and noses flat; and, in this description, the Dutch travellers agree with him. The truth is, they differ from the Nubians, both in colour and features. The skin of the Ethiopians is brown, or olive-coloured, like that of the southern Arabians, from whom, it is probable, they derive their origin. In stature, they are tall; their features are strongly marked; their eyes are large and beautiful; their noses, well proportioned; their lips, thin; and their teeth, white. Of the inhabitants of Nubia, on the contrary, their noses are flat; the lips, thick and prominent; and the countenance exceedingly black. These Nubians, as well as the Barberins their western neighbours, are a species of Negroes not unlike those of Senegal.

The Ethiopians are a people between the extremes of barbarism and civilisation: their garments are cotton, though those of the more opulent, are silk; their houses are low, and of a bad construction; and their lands are wretchedly neglected. These circumstances are owing to the behaviour of their nobles, who despise the tradesmen and the common people. Each of these classes, however, lives separately, and has its own villages or hamlets. Unprovided with salt, they purchase it from abroad for its weight in gold; and they are so fond of raw meat, that, at their feasts, the second course which is considered the most delicate, consists of it entirely. Though they have vines, they make no wine; and their usual beverage is a sour composition made with tamarinds. They use horses for the purpose of travelling, and mules for carrying their merchandise. Of the arts and sciences they have little knowledge.

Their language is without rules; and their manner of writing, though their characters are more beautiful than those of the Arabians, is so imperfect, that they require several days to write a letter. In their mode of salutation, there is something exceedingly whimsical: each takes the right hand of the other and carries it to his mouth: afterwards, the saluter takes off the scarf of the person saluted, and fastens it round his own body: thus the latter is left half naked, few of the Ethiopians wearing any more than this scarf, and a pair of cotton drawers.

The first Negroes we meet with, are those who live on the south side of Senegal, These people, as well as those who occupy the different territories between Senegal and Gambia, are called Jalofes. They are all very black, well proportioned, and of a size sufficiently tall. Their features are less harsh than those of the Negroes; and some of them, especially of the female sex, have features that are far from being irregular. With respect to beauty, they value fine eyes, a well made nose and mouth, and lips of a proportionable smallness. With respect to the ground of the picture, they differ from us; for with them, the colour must be exceedingly black and glossy. Their skin, however, is very delicate and soft; and, colour excepted, we find among them women as handsome as in any other country in the world. They are usually very gay, lively and amorous.

Father du Tertre, says expressly, that, if the Negroes are for the most part flat-nosed, their parents are the sole cause of it. He adds, that they also compress their lips to make them thicker; and that, of the few who have undergone neither of these operations, the features of the countenance are as comely, the nose as prominent, and the lips as delicate as those of the Europeans. It appears, however, that among the Negroes in general, thick lips and a nose broad and flat are the gifts of nature; from which originated the custom of flattening the nose and thickening the lips of those, who at their birth, discovered a deficiency in these ornaments.

Though the Negroes of Guinea are very healthy, they seldom attain, what we term, old age. In his own country, a Negro of fifty, is a very old man; and so early as forty, he manifests all the marks of being so.

Negroes, in general, are remarkably innocent and inoffensive: if properly fed, and not exposed to bad usage, they are contented, joyous, and obliging; and on their very countenances we may read the satisfaction of their souls. On the contrary, if harshly treated, their spirits forsake them, and they droop with sorrow. Alike impressed with a sense of what injuries and favours they have received, to a cruel master they are implacable foes; but to an indulgent one, they are servants who will exert every effort of which they are capable, to express their zeal and attachment to him. To their children, their friends, and their countrymen, they are naturally compassionate and tender. Content with the little they have, they communicate a share to those who are indigent. That they have an excellent heart, is evident; and in having this, they have the seed of every virtue. Their sufferings demand a tear. Are they not sufficiently unhappy in being reduced to a state of slavery, without reaping the smallest fruits of their labour? But, to crown their wretchedness, they must be abused, buffeted, and treated like brutes. Humanity revolts at a conduct, which nothing but the thirst for gold could ever have inspired; and, of which, every day will produce an aggravated repetition, till an enlightened legislature shall put an end to a traffic which disgraces human nature.

Mr Kolbe, who has given so minute a description of the Hottentots, is strongly of opinion, that they are Negroes; like the latter, he assures us, their hair is short, black, frizzled, and wooly; nor in a single instance, did he ever observe it long.

Though, of all the Hottentots, the nose is very flat and broad, yet it would not be of that form, did not their mothers, who consider a prominent nose a deformity, crush it presently after their birth. Their lips are also thick, the upper lip in particular; their teeth are very white; their eye-brows, thick; their heads, large; their bodies, meagre; and their limbs, slender. They seldom live above forty years; and the cause, no doubt, is their residing continually in the midst of filth, and constantly living upon meat that is corrupt. I might dwell longer upon the description of this nasty people; but, as most travellers have given very accurate accounts of them, I shall close it with a fact related by Tavernier. The Dutch, he says, once took a Hottentot girl, soon after her birth; and bringing her up among themselves, she became as white as an European. Hence, he presumes, that all Hottentots would be tolerably white, were it not for the custom of perpetually begriming themselves.

In America, we observe less variety in the human form than might be expected; though it cannot be supposed that in such an extensive continent, a considerable diversity, may be found.

In this search, we find in the most northern parts, a species of Laplanders similar to those of Europe, or to the Samoeids of Asia; and though, in comparison to the latter, they are few in number, yet they are extensively diffused. Those who inhabit the land of Davis' Straits, are of a diminutive size, but very strong; their complexion, olive; and their legs, short and thick. They are skillful fishers; they eat their fish and meat raw; and pure water, or the blood of the dog-fish, is their constant drink. Here we see the figure, colour, and manners of the Laplanders. But what is truly singular, as among the Laplanders of Europe we meet with Finlanders who are white, comely, tolerably tall, and well made; so, among the Laplanders of America, we meet with another species of men, tall, well made, tolerably white, and with features exceedingly regular.

Of a different race from the former are the savages of Hudson's Bay, and northward of the land of Labrador. They are ugly, diminutive, and unshapely; and their visages are almost entirely covered with hair, like the savages of the country of Yeço, northward of Japan. In summer, they dwell under tents made of skins of the rein-deer; in winter, they live under ground like the Laplanders and the Samoeids, and sleep together without distinction. They likewise live to a great age, and feed on nothing but raw meat and fish. The savages of Newfoundland have a considerable resemblance to those of Davis' Straits; they are low in stature; have little or no beard; their visages are broad and flat; their eyes, large; they are rather flat-nosed; and, upon the whole, are far from being unlike the savages of the North Continent, and of the environs of Greenland.

Besides the savages scattered over the most northern parts of America, we find great numbers which are entirely different in Canada, and the vast extent of land to the Assiniboils. These are tolerably tall, robust, vigorous, and well made. They have hair, and eyes black; teeth, very white; complexion, tawny; beard, scanty; and hardly a vestige of hair over the whole body. They are hardy indefatigable walkers, and very nimble runners: alike unaffected by excesses of hunger, and satiety; are by nature bold, fierce, grave, and sedate; and so strongly do they resemble the Oriental Tartars that, were they not separated from each other by an immense sea, we should conclude them to be descendants of that nation. In point of latitude, their situation is the same, which farther proves the powerful influence of climate not only on the colour but the figure of men.

Mr Fabry, who travelled a prodigious way to the northwest of the Missisipi, and visited places which no European had done before, and of which the savage inhabitants had not been destroyed, has assured me that that part of America is so deserted, that he often travelled an hundred and sometimes two hundred leagues, without observing a single human face or the smallest vestige of an habitation. He adds, that whenever he met with any habitations, they were always at immense distances from one another; and that, in each of them, there was frequently not above one family, sometimes there were two or three families, but never above twenty persons together; and between these twenty persons and twenty others, there was generally a space of a hundred leagues.

If, however, in the whole of North America, there were none but savages to be met with; in Mexico and Peru, there are found nations, polished, subject to laws, governed by kings, industrious, acquainted with the arts, and not destitute of religion.

In the present state of those countries, so intermixed are the inhabitants of Mexico and New Spain, that we hardly meet with two visages of the same colour. in the town of Mexico, there are white men from Europe, Indians from the north and south of America, and Negroes from Africa, &c. insomuch, that the colour of the people exhibits every different shade between black and white. The real natives are very brown, or of an olive colour, well made, and extremely active.

In surveying the various appearances which the human form assumes in the different regions of the earth, the most striking circumstance is that of colour; which has been attributed to various causes: but in my opinion, and experience warrants us to affirm, that the heat of the climate is the principal. Where this is excessive, as at Senegal and Guinea, the inhabitants are entirely black; where it is less violent, as on the eastern coasts of Africa, they are of a lighter shade; where it begins to be somewhat more temperate, as in Barbary, India, Arabia, &c. they are only brown; and where it is altogether temperate, as in Europe and Asia, they are white. All the Tartars, for example, are tawny;

while the Europeans, who live in the same latitude, are white. Of this difference the reason seems to be, the former are always exposed to the air, have no towns, no fixed habitations; but sleep upon the earth, and live coarsely in every respect. These circumstances are sufficient to render them less white than the Europeans, to whom nothing is wanting which may render life comfortable and agreeable. Why are the Chinese whiter than the Tartars, whom they resemble in all the features of the visage? It is because they are civilized, live in towns, and are provided with every expedient for defending themselves against the injuries of the weather, to which the Tartars are continually exposed.

When cold becomes extreme, however, it produces some effects similar to those of excessive heat. The Samœids, the Laplanders, the Greenlanders, are very tawny; and it is even asserted, as we have already observed, that among the Greenlanders there are men as black as those of Africa. Violent cold, and violent heat, produce the same effects upon the skin; for these two causes act by one quality, which they possess in common. This quality is dryness; and as it is a quality of which intense cold is equally productive as intense heat, so by the former, as well as by the latter, the skin may be dried up, altered, and rendered as tawny as what we find it among the Laplanders. Cold compresses, shrivels, and reduces within a narrow compass all the production of nature. Hence we find the Laplanders, who are perpetually exposed to all the rigours of the most piercing cold, the most diminutive of the human species.

The most temperate climate is between the degrees of forty and fifty. There we behold the human form in its greatest perfection; and there we ought to form our ideas of real and natural colour of man. Situated under this zone, the civilized countries are, Georgia, Circassia, the Ukarine, European Turkey, Hungary, South Germany, Italy, Switzerland, France, and the North of Spain. Of the latter, the inhabitants are the most beautiful, and the most shapely in the world.

As the first, and almost the sole cause of the colour of mankind, we ought therefore to consider the climate; and though upon the skin the effects of nourishment are trifling, when compared with those of the air and soil, yet upon the form they are prodigious. Food which is gross, unwholesome or badly prepared, has a strong and a natural tendency to produce a degeneracy in the human species. Hence in all countries where the people fare wretchedly, they are more ugly, and more deformed than their neighbours.

The air and the soil have also great influence, not only on the form of men, but on that of animals, and of vegetables. In comparing the peasants who live on hilly grounds, with those who live embosomed in the neighbouring valleys, we find, that the former are active, nimble, well-shaped, and lively; and the women generally handsome. On the contrary, the latter, in proportion as the air, food, and water are gross, are clumsy, and less active and vigorous.

From every circumstance, therefore, we may obtain a proof, that mankind are not composed of species essentially different from each other. It appears, on the contrary, that there was originally but one individual species of men, which, after being multiplied and diffused over the whole surface of the earth, underwent divers changes from the influence of the climate, from the difference of food, and of the mode of living, from epidemical distempers, as also from intermixture; varied *ad infinitum*, of individuals more or less resembling each other: at first, these alterations were less considerable, and confined to individuals; but afterwards, from the continued action of the above causes becoming more general, more sensible, and more fixed, they formed varieties in the species. These varieties have been, and are still perpetuated from generation to generation, in the same manner as certain deformities, and certain maladies, pass from parents to their children. And in short, as these varieties would never have been produced but by a concurrence of external and accidental causes, as they would never have been confirmed and rendered permanent, but by time, and by the continued action of these causes; so it is highly probable, that in time they would in like manner gradually disappear, or even become different from what they at present are, if such cause were no longer to exist.

OF QUADRUPEDS.

UPON comparing the various animals of the globe with each other, we shall find, that Quadrupeds demand the rank immediately next ourselves; and, consequently, come first in consideration. The similitude between the structure of their bodies and our own, those instincts which they seem to enjoy in a superior degree to the other classes that live in air or water, their constant services to man, or the unceasing enmity they bear him, all render them the foremost objects of his curiosity, the most interesting part of animated nature.

In the first ages of the world it is probable, that all living creatures were nearer an equality than at present. Man, while yet savage himself, was but ill qualified to civilize the forest. While yet naked, unarmed, and without shelter, every wild beast was a formidable rival, and the destruction of such was the first employment of heroes. But when he began to multiply, and arts to accumulate, he soon cleared the plains of its brute inhabitants; he soon established an empire over all the orders of animated nature; part was taken under his protection and care, while the rest found a precarious refuge in the burning desert of the howling wilderness.

The most obvious and simple division therefore of Quadrupeds, is into the Domestic and Savage; by Domestic I mean, such as man has taken into friendship, or reduced to obedience; by the Savage, those who still preserve their natural independence and ferocity; who either oppose force by force, or find safety in swiftness or cunning.

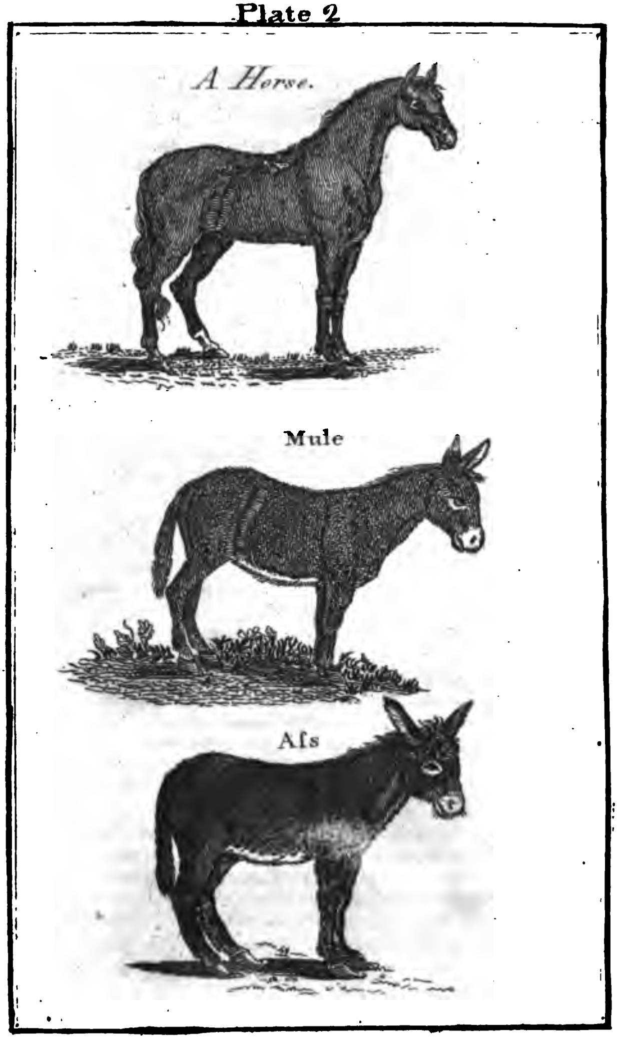
The savage animal preserves at once his liberty and instinct, but man seems to have changed the very nature of domestic animals by cultivation and care. A domestic animal is a slave, which has few other desires, but those which man is willing to grant it. Humble, patient, resigned, and attentive, it fills up the duties assigned, ready for labour, and content with subsistance.

Thus we, in some measure, see nature under a continual constraint, in those creatures we have taught to live about us; but it is otherwise when we come to examine the savage tenants of the forest, or the wilderness; there every species preserves its characteristic form, and is strongly imprest with the instincts and appetites of nature. The more remote from the tyranny of mankind, the greater seems their sagacity; the Beavers, in those distant solitudes, where men have rarely past, exert all the arts of architects and citizens; they build neater habitations than even the rational inhabitants of those countries can shew, and obey a more regular discipline than ever man could boast; but as soon as man intrudes upon their society, their spirit of industry and wisdom ceases; they no longer exert their social arts, but become patient and dull, as if to fit them for a state of servitude.

But not only their industry, but their courage is represt by the vicinity of man: The Lion of the deserts of Nubia, that has been only taught to measure his strength with weaker animals, and accustomed toconquer, is possessed of amazing courage; instead of avoiding man, as other animals are found to do; he attacks whole caravans crossing the Desert, and when over-powered, retires still facing the enemy. But the Lion of Morocco, which is a more populous country, seems to acknowledge a superiority, and is even scared away by the cries of women and children.

The heads of Quadrupeds are variously formed, corresponding to their different manner of subsisting: in the porcine species, it is sharp, as their food is chiefly under ground: in the canine, which pursue their prey by scent, it is long, in order to afford room for the olfactory nerves: in others, which are frequently engaged in combat, it is short and strong, as in the lion. Their teeth also are adapted to the nature of their food: in those which live on vegetables, they are edged before, for cropping grass and herbs: in carnivorous animals, the fore teeth are sharp for holding and dividing; and farther in the mouth, they turn broad with unequal, rugged surfaces, to render the aliment fit to assimilate with the fluids in the stomach. Their feet and legs are also adapted to them; those which live on fish have webbed feet; and beasts of prey have claws which they can sheathe or unsheathe at pleasure. The stomachs of Quadrupeds are formed according to their diet; those which eat flesh, have it small and glandular, while those which eat vegetables have it very large. Some animals which chew the cud have four stomachs; but in Africa, where the plants are soft and nutritious, only two.

Plate 2



THE HORSE. *(Plate 2.)*

The noblest conquest ever made by man, is that of this spirited and haughty animal, which shares with him the fatigues of war, and the glory of the combat. Equally intrepid as his master, the horse sees the danger, and braves it; he is inspired and animated at the clash of arms, and feels all the ardour of the warrior. He takes pleasure also in the chace, in tournaments, and in the course; he is all fire, but equally tractable as couregeous, does not give way to his impetuosity, but knows how to check his inclinations: he not only submits to the arm which guides him, but even seems to consult the desires of his rider; and, always obedient to the impressions which he receives from him, presses on, moves gently, or stops, as his rider pleases. The horse is a creature that renounces his being, to exist only by the will of another, which he knows how to anticipate and execute by the promptitude and exactness of his movements: he feels as much as we desire, does only what we wish, gives himself up without reserve, and refuses nothing, makes use of all his strength, and even dies to obey us.

Such is the horse, the natural qualities of which art has improved. His education commences with the loss of his liberty and by constraint it is finished. The servitude of these creatures is universal, and so ancient that we rarely see them in their natural state. They are never wholly free from all their bands, not even at the time of rest; and if they are sometimes suffered to range at liberty in the fields, they always bear about them the marks of servitude, and too often those of labour and pain.

There are few parts of the known world where the Horse is not produced; but if we would see him in the enjoyment of his native freedom, we must look for him in the wild and extensive plains of Africa and Arabia, where he ranges without controul, in a state of entire independency. In those immense tracts the wild Horses may be seen feeding together, in droves of four or five hundred; one of them always acting as centinal, to give notice of approaching danger: This he does by a kind of snorting noise, upon which they all fly off with astonishing rapidity. The wild Horses of Arabia are esteemed the most beautiful in the world: they are of a brown colour, with mane and tail of black tufted hair, very short; they are smaller than the tame ones, are very active, and of great swiftness. The most usual method of taking them is with traps concealed in the sand, by which they are entangled and caught.——It is probable there were once wild horses in Europe, which have long since been brought under subjection. Those found in America were originally of the Spanish breed, sent thither upon its first discovery, which have since become wild, and spread themselves over various parts of that vast continent. They are generally small, not exceeding fourteen hands high; with thick heads and clumsy joints: their ears and necks are longer than those of the English horses. They are easily tamed; and if by accident they are set at liberty, they seldom become wild again; but know their master, and may be easily caught by him.

The natural disposition of these animals is not ferocious, for though superior in strength to the greatest part of animals, they never attack them; and if they are attacked by others, they either disdain them or trample them under their feet. They herd together, as they are not fearful of, but fond of one another. As herbs and vegetables are sufficient for their nourishment, they have quite enough to satisfy their appetite! and as they have no relish for the flesh of animals, they never make war with them, nor with themselves. They live in peace, because their appetite is simple and moderate; and, as they have enough, there is no room for envy.

Mares usually go with foal eleven months and some days; they breed commonly till the age of fourteen or fifteen years and the more vigorous till they are above eighteen.

The duration of the life of horses, is like that of every other species, which is in proportion to the length of the time of their growth. Man, who is above fourteen years in growing, lives six or seven times as long, that is ninety or a hundred years. The horse, which attains his full growth in four years, lives six or seven times as long, that is twenty-five or thirty years. There are so few examples to contradict this rule, that we should not even regard them as exceptions from whence we may draw any precedents. It is worthy of remark too, that as robust horses arrive at their full growth in less time than delicate ones, they also live less time, and at fifteen years of age become old.

From time immemorial it has been the custom to separate the colts from their mothers after they have suckled them five, six, or seven months; for experience has taught, that those colts which are suckled ten or eleven months, are not of equal value with those which are weaned sooner, though they are generally fuller of flesh. After six or seven months sucking, they are weaned, that they may take more solid nourishment than milk: bran is then given them twice a day, and a little hay, of which the quantity is increased in proportion as they advance in age, and they are kept in the stable as long as they seem to retain any desire to return to the mare; but when this desire ceases, they are suffered to go out in fine weather, and led to pasture.

Great attention must be paid in weaning young colts, to put them into a proper stable, not two hot, for fear of rendering them delicate and too sensible to the impressions of the air. They should frequently have fresh litter and be kept very clean, by rubbing them often down with a wisp of straw. But they should not be tied up or curried till they are two years and a half, or three years old; for this gives them great pain, their skin being too delicate to bear it, and they would fall away instead of growing fat from it. Care too must be taken that the rack and manger are not very high, as the necessity of raising their heads too high in order to reach their food, may possibly give a habit of carrying it in this fashion, which would give them an aukward appearance.

At the age of three years, or three and a half, the rider should begin to break them, and make them tractable. They should at first have a light easy saddle, and ought to wear it two or three hours every day, and they should be accustomed to have a snaffle bit in their mouths, and lift up their feet, on which they should sometimes receive rather sharp strokes. At first a curb should not be used, they should be held by a leather strap, and be made to trot, on even ground without a rider; but when he turns easily, and willingly follows the person who holds the leather strap, the rough rider should mount and dismount him again in the same place, without making him move, till he is four years old, because before that age, the weight of a man would overload him, but at four he should be made to walk or trot, a little way at a time, with the rider on his back.

By means of the bridle we teach horses to hold up their heads, and place them in a proper manner, and the smallest sign or movement of the rider is sufficient to make the horse shew all his different paces.

Though walking is the slowest of all their paces, an horse should, notwithstanding, step quick, and neither take too long nor too short steps. His carriage should be easy, this ease depends much on the liberty of his shoulders, and is known by the manner in which he carries his head in walking. If he keep it high and steady, he is generally vigorous, quick and free in his motions. When the motion of the shoulders is not free, the leg does not rise enough, and the horse is apt to stumble, and strike his foot against the inequalities of the ground. When, on the other hand, the shoulders are more confined in their action, and the motion of the the legs appears free, the horse is soon fatigued, stumbles, and becomes useless. A horse should raise his shoulders, and his lower haunches in walking. He should also support his leg, and raise it high enough, but if he keep it up too long, or let it fall too slowly, he loses all the advantage of his suppleness, and becomes quite heavy.

It is not sufficient that his walk should be easy, his steps must be also equal and uniform both behind and before, for if his buttocks have a swinging motion, whilst he keeps up his shoulders, the rider is much jolted. The same thing happens when the horse extends his hind leg too much, and rests it almost in the same place in which he rested his fore foot. Horses with short bodies are subject to this fault. Those which cross their legs or strike them against each other, are not sure footed. But those with long bodies are the most easy for the rider, because he is at a greater distance from the two centres of motion, the shoulders and haunches, and is therefore less sensible of the motion and jolting.

The usual method of walking among quadrupeds, is to lift up one of the fore legs and one of the hind legs together. Whilst the right fore leg is in motion, the left hind leg follows and advances at the same time, and this step being made, the left fore leg conjointly with the right hind leg in its turn, and so on. As their bodies are supported upon four points of support, which form a long square, the easiest manner of moving for them, is to change two of them at once in a diagonal line, in such a manner, that the centre of gravity of the body of the animal may move but little, and rest always in the direction of the two points which are not in motion. In the three natural paces of the horse, the walk, the trot and the gallop, this rule of motion is always observed, but with some difference. In the walk, there are four times in the movement; if the right fore leg moves first, the left hind leg follows the moment after, then the left fore leg moves forward in turn, to be followed the instant after by the right hind leg. Thus the right fore foot rests on the ground first, the left hind foot next; then the left fore foot rests, and, lastly, the right hind foot, which makes a movement of four times, and at three intervals, of which, the first and last are shorter than the middle one. In the trot there are but two times in the movement; if the right fore leg goes off first, the left hind leg moves at the same time, and without any interval between the motion of the one and the motion of the other; the left fore leg moves also at the same time with the right hind one.

In the gallop there is usually three times; but as in this movement there is a kind of leaping, the interior parts of the horse do not move of themselves, but are driven away by the strength of the haunches and the hinder parts. Thus, of the two fore legs, the right ought to advance more forward than the left. The left ought before hand to rest on the ground to serve as a point of rest for the sudden jirk which he takes. Hence the left hind foot makes the first time of the movement, and rests on the ground first; then the right hind leg is lifted up conjointly with the left fore leg, and rest on the ground together. At length, the right fore leg, which is raised an instant after the left fore leg, and right hind one, rests on the ground last, which makes the third time. Thus, in this movement of the gallop, there are three times and two intervals; and in the first of these intervals, when the movement is made with haste, there is an instant when the four legs are in the air at the same time, and when the four shoes of the horse may be seen at once. When the horse has the haunches and the houghs supple, and moves them with agility, the movement of the the gallop is more perfect, and the cadence is made in four times: he then rests the left hind foot, which shews the first time; when the right hind foot falls to the ground, and shews the second time, the left fore foot falls a moment after, shewing the third time; and at length the right fore foot, which rests last, shews the fourth time.

Horses usually gallop on the right foot, in the same manner as they carry the fore right leg in walking and trotting. They also throw up the dirt in galloping with the right fore leg, which is more advanced than the left. The right hind leg which follows immediately the right fore one, is more advanced than the left hind leg, the whole time the horse continues to gallop. Hence the left leg which supports all the weight, and which forces forward the others, is more tired; for this reason it would be right to exercise horses in galloping alternately on the left foot, as well as on the right; and consequently they would bear much longer this violent motion.

In walking, the legs of the horse are lifted up only a small height, and the feet almost scrape the ground. In trotting they are raised higher, and the feet are entirely free from the ground. In galloping the legs are lifted up still higher, and the feet seem to rebound from the earth. The walk to be good should be quick, easy, light, and sure. The trot should be firm, quick, and equally sustained. In this place, the horse should carry his head high, and his back straight; for, if the haunches rise and fall alternately at each trot he takes, if the crupper moves up and down, and the horse rocks himself, he trots ill. If he throws out his fore legs it is another fault: the fore legs should tread in a line with the hind ones, which should always efface their tracts. When one of the hind legs is thrown forwards, if the fore leg of the same side remain in its place too long, the motion becomes more uneasy and difficult from this resistance. For this reason the interval between the two times of the trot should be short; but, be it even so short, this resistance is sufficient to make this pace more uneasy than either walking or galloping, because in walking the motion is more easy, gentle, and the resistance less; and in galloping there is scarcely any horizontal resistance, which is the only one inconvenient to the rider.

Walking, trotting, and galloping, are the most natural paces of the horse. Some, however, have another called the amble, which is very different from the former, and, at the first glance appears contrary to the laws of mechanics. In this pace the foot of the horse grazes the ground still more than in walking, and each step is much longer. But the most remarkable circumstance is, that the two legs on the same side, set off at the same time to make a step, and afterwards the two other legs move at the same time to make another, so that each side of the body alternately is without support, and there is no equilibrum maintained between the one or the other. It is therefore only from his almost grazing the earth, and the quick alternate motion, that he can support himself in this pace. There is in the amble, as well as in the trot, but two times in the motion; and all the difference is, that in the trot the two legs which go together are opposite, in a diagonal line;

instead of which, in the amble, the legs on the same side go together. This pace, is very easy for the rider, as it has not the jolting of the trot, which is occasioned from the resistance the fore leg meets with when the hind leg rises. Because in the amble, the fore leg rises at the same time with the hind leg on the same side: instead of which, in trotting the fore leg on the same side, rests and assists the impulse the whole time the hind leg is in motion.

The head of a well-proportioned horse should be lean and small, without being too long. The ears should be at a moderate distance, small, straight, immoveable, narrow, thin, and well placed on the top of the head. The forehead should be narrow, and a little convex. Hollows should be filled up, the eye-lids thin, the eyes clear, lively, full of fire, rather, large, and projecting from the head; the pupil large, the nether jaw thin, the nose a little acquiline, the nostrils large and open, the partition of the nose and the lips thin. The mouth ought to be of a moderate width, the withers raised and sloping, the shoulders thin, flat, and not confined, the back equal, even, and insensibly arched lengthways, and raised on each side of the spine, which should appear indented. His flanks should be full and short, the rump round and fleshy, the haunches well covered with hair, the stump of the tail thick and firm, the fore legs and thighs thick and fleshy, the knees round before, the houghs large and rounded, the sinew loose, the joint next the foot small, the fetlock not thickly covered with hair. The pastern ought to be large, and of a middling length, the coronet rather raised, the hoof black, smooth, shining, and high, the quarters round, the heels wide and moderately raised, the frog small and thin, and the sole thick and hollow.

But there are few horses in which this assemblage of perfection is to be found. The eyes are subject to many complaints, which are not easily understood. In a healthy eye, we ought to see through the cornea two or three spots of the colour of soot above the pupil. To see these spots, the cornea must be clear, clean, and transparent; if it appears double, or of a bad colour, the eye is not good. A small, long, and straight pupil, encompassed with a white circle, is also a bad sign; and when it is of a bluish-green colour, the eye is certainly bad and the sight dull.

It is very easy to form a judgment of the natural and actual state of this animal by the motion of his ears: when he walks, he should project forwards the points of his ears: a jaded horse carries his ears low; those which are spirited and mischievous, alternately carry one of their ears forwards and the other backwards: they all carry their ears on that side from whence they hear a noise, and when any one strikes them on the back, or on the rump, they turn their ears back. Horses which have their eyes deep sunk in the head, or one smaller than the other, have usually bad sight: those which have the mouth dry, are not of so healthy a temperament as those which have the mouth moist, and make the bridle frothy. A saddle horse ought to have his shoulders flat, moveable, and not very fleshy; the draught horse, on the contrary, should have them flat, round, and brawny; if, notwithstanding, the shoulders of a saddle horse are too thin, and the bones shews themselves through the skin, it is a proof they are not free, and consequently the horse cannot bear fatigue. Another fault of a saddle horse is when the chest projects too far forward, and the fore legs drawn too much back, because he is apt to rest on the hand in galloping, and even to stumble and fall. The length of the legs should be proportionate to the height of the horse; when the fore legs are too long he is not sure footed, if they are too short, he is too heavy in the hand. It is a remark that mares are more liable than horses to be short-legged, and that the legs of horses in general are thicker than those of mares and geldings.

One of the most important things to be known, is the age of the horse, which is best discovered from his teeth, of which he has forty, viz. twenty-four grinders, four eye teeth, and twelve incisive teeth; mares have no eye teeth, or if they have, they are very short: the grinders are not instrumental to this knowledge, we form our judgment from the front eye and teeth. The twelve front teeth begin to shew themselves fifteen days after the birth of the foal, these first teeth are round, short, weak, and drop out at different periods in order to make room for others: at two years and a half the four front middle teeth drop out the first, two at top and two at bottom; a year after, four others fall out, one on each side of those which are already replaced: at about four years and a half, four others drop out, always on the side of those which have been replaced, these four last milk teeth are replaced by four others, which do not grow near so fast as these which replaced the first eight; and the four last teeth which are called the wedges, and which replace the four last milk teeth, are those by which we know the age of a horse. These are easily known, since they are the third as well at top as at bottom, beginning to count from the middle of the extremity of the jaw. These teeth are hollow, and have a black mark in their concavity. At four years and a half, or five years old, they scarcely project beyond the gums, and the hollow is plainly seen. At six and a half it begins to fill up, the mark also begins to diminish and grow narrower, and so continues till seven years and a half or eight years, when the hollow is entirely filled up, and the black mark effaced. After the animal has attained eight years, as these teeth do not give further information of the age, we generally judge by the eye teeth, or tusks. These four teeth are placed at the side of those which I have just now taken notice of. The eye teeth, as well as the grinders, are not preceded by others which fall out, those of the inferior jaw usually come out first at three years and a half, and the two of the upper jaw at four years, and till they are six years old they are very sharp. At ten years old the upper ones appear already blunt, worn, and long, because they are bare, the gum wearing away with age, and the more they are worn away, the more aged the horse is. But there are horses whose teeth are so hard that they do not wear, and upon which the black mark subsists, and is never effaced; and others which have the mark in the mouth as long as they live. We may also know, though with less precision, the age of a horse by the ridges of the palate, which are effaced in proportion to his age.

It has been remarked, that studs kept in dry and light countries produce good-tempered, swift, and vigorous horses, with nervous legs and hard hoofs; while, on the other hand, those which are bred in damp places, and in fat pasturage, have generally the head large and heavy, the legs thick, the hoofs soft, and the feet flat. This difference arises from the climate and food; but, what is more difficult to be accounted for, and what is still more essential than any thing that has been said, is, the necessity of always crossing or mixing the breed, if we would prevent their degeneration.

The Arabian horses are the handsomest known in Europe, they are larger and plumper than those of Barbary, and equally well-shaped, but as they are not often brought into this country, riding-masters are not able to give an exact account of their perfections and defects.

The horses of Barbary are more common. They are frequently negligent in their paces, and must be often reminded. They are very swift and strong, light, and fit for hunting. These horses seem the most proper to breed from; it were only to be wished that they were larger, as they seldom exceed four feet eight inches high.

The Turkish horses are not so well-proportioned as those of Barbary. They will, however, travel a great way, and are long-winded. This is not surprising, if we consider, that in warm countries the bones of animals are harder than in cold climates, and it is for this reason that they have more strength in the legs.

The Spanish horses hold the second rank after those of Barbary. Those of a handsome breed are plump, well-coated, and low. Their movements are likewise quick and supple, and they are remarkable for spirit and boldness. Their hair is usually black, or of a bay chesnut colour, though there are some of all colours, and it is but seldom that they have white legs and noses. The Spaniards, who have an aversion to these marks, never breed from horses that have them, chusing only a star in their forehead.

The horses of Italy were formerly much handsomer than they are at present, because the breed for some time has been neglected. Notwithstanding this, there are still some handsome Neapolitan horses, especially draught ones; but, in general, they have the head large, and the chest thick. They are untractable, and consequently not easily managed; but these defects are compensated by their noble form, their stateliness, and the beauty of their motions.

The Danish horses are so handsome in their form, and so beautiful in their coats, that they are preferred to all others for putting into carriages. They are of all colours, and even of some singular ones, as pied. Horses, however, spotted like tigers, are found no where but in Denmark.

In Germany we meet with very handsome horses; but they are generally heavy and short-breathed. The Hussars and Hungarians split their nostrils, in order, they say, to give them more breath, and also to hinder their neighing in battle. The Flemish horses are greatly inferior to those of Holland: almost all of them have large heads, flat feet, and are subject to humours in the eyes; the two last of which are considerable defects in coach-horses.

In Great-Britain the breed of Horses seems to be as mixed as that of its inhabitants. By great attention to the improvement of this noble animal, by a judicious mixture of several kinds, and by superior skill in management, the English Race-horse is allowed to excel those of the rest of Europe, or perhaps the whole world. For supporting a continuance of violent exertion, (or what is called, in the language of the turf, bottom) they are superior to the Arabian, the Barb, or the Persian; and for swiftness they will yield the palm to none. An ordinary racer is known to go at the rate of a mile in less than two minutes; but there have been instances of much greater rapidity: the famous horse Childers has been known to move eighty-two feet and an half in a second, or nearly a mile in a minute; he has run round the course at Newmarket, which is little less than four miles, in six minutes and forty seconds.

The Hunter is a happy combination of the Race-Horse with others of superior strength, but inferior in swiftness; and may be considered as the most useful breed of horses in Europe. Geldings of this kind are sent over to the continent (where their superior worth is universally acknowledged) in great numbers, and sold at very high prices to foreigners of the first distinction. The mixture of this with others of inferior rank forms an endless variety, the different gradations becoming too minute to be discriminated.

No other country has produced a breed of horses equal in size and strength to the Black-Horse or larger kind of our draught horses. The cavalry of England is in general formed of this class of horses; but their inutility being experienced in some situations, others of a lighter and more active kind have been substituted in a few regiments. The fens of Licolnshire generally produce a larger breed than any other part of the kingdom. In London there have been instances where a single horse of that kind has drawn, for a small space, the enormous weight of three tons, half of which is known to be their ordinary draught.

The common Cart-Horse is inferior to the last in size and strength: his form is heavy, his motions slow, and his aspect without sprightliness; he is nevertheless extremly useful, and is employed in the business of agriculture and other domestic concerns.

The horse also remembers ill treatment much longer than the ox; his natural disposition and courage are such, that, when he finds more is expected from him than he is able to perform, he is irritated and will not endeavour. Instead of which, the ox, who is slow and idle, exerts himself, and is more easily tired.

The horse sleeps much less than man; for when he is in health, he does not rest more than two or three hours together: he then gets up to eat; and when he is satisfied, lies down a second time; but does not sleep more than three or four hours in twenty-four. There are even some horses which never lie down, but sleep standing. It has also been remarked, that geldings sleep oftener and longer than horses.

THE MULE. (*Plate 2.*)

This useful and hardy animal is the offspring of the horse and the ass, and being barren, furnishes us with an indisputable proof that the two species are perfectly distinct. Nature has providently stopped the further propagation of these heterogeneous productions, to preserve, uncontaminated, the form of each animal; without which regulation the races would, in a short time, be mixed with each other, and every creature losing its original perfection, would rapidly degenerate.

The common mule is very healthy; and will live above thirty years: it is found very serviceable in carrying burthens, particularly in mountainous and stony places where horses are not so sure-footed. The size and strength of our breed has lately been much improved by the importation of Spanish Male-Asses; and it were much to be wished that the useful qualities of this animal were more attended to: for by proper care in its breaking, its natural obstinacy would be in a great measure corrected; and it might be formed with success, for the saddle, the draught, or the burthen.

People of the first quality in Spain are drawn by mules, where fifty or sixty guineas is no uncommon price for one of them; nor is it surprising, when we consider how far they excel the horse in travelling in a mountainous country, the mule being able to tread securely where the former can hardly stand. Their manner of going down the precipices of the Alps, the Andes, &c. is very extraordinary; and with it we will conclude their history. In these passages, on one side, are steep eminences, and on the other, frightful abysses; and, as they generally follow the direction of the mountain, the road, instead of lying in a level, forms at every little distance steep declivities, of several hundred yards downward. These can only be descended by mules; and the animal itself seems sensible of the danger, and the caution that is to be used in such descents. When they come to the edge of one of these descents, they stop without being checked by the rider; and if he inadvertently attempt to spur them on, they continue immoveable. They seem all this time ruminating on the danger that lies before them, and preparing themselves for the encounter. They not only attentively view the road, but tremble and snort at the danger. Having prepared for the descent, they place their fore feet in a posture, as if they were stopping themselves; they then also put their hinder feet together, but a little forward, as if they were going to lie down. In this attitude, having taken as it were a survey of the road, they slide down with the swiftness of a meteor. In the mean time, all the rider has to do is to keep himself fast on the saddle without checking the rein, for the least motion is sufficient to disorder the equilibrium of the mule; in which case they both unavoidably perish. But their address in this rapid descent is truly wonderful; for in their swiftest motion, when they seem to have lost all government of themselves, they follow exactly the different windings of the road, as if they had previously settled in their minds the route they were to follow, and taken every precaution for their safety. In this journey the natives place themselves along the sides of the mountains, and holding by the roots of the trees, animate the beasts with shouts, and encourage them to persevere. Some mules, after being long used to these journies, acquire a kind of reputation for their safety and skill; and their value rises in proportion to their fame.

THE ASS. *(Plate 2.)*

The Ass is an animal whose inward parts and skeleton, have a very near resemblance to a horse, and yet they may be readily distinguished from each other with the glance of an eye, for the head is larger in proportion to the body; the ears much longer, and the forhead and temples furnished with longer hair; the eyes are not so prominent, the lower eye-lid more flat, and the upper lip more pointed and hanging. Besides, the withers are not so high, the back-bone generally stands more out, and the buttocks are higher than the withers; the tail is without hair, from the root to about three quarters of its length, though it is furnished with hair at the end, and the mane is shorter. However, the fore legs are like those of a horse, though in the hind legs there is some difference, for they are generally more crooked.

The large head, the forehead and temples are loaded with hair, the eyes are sunk into the head, and at a great distance from each other, these with the muzzle prominent towards the end, give an air of stupidity to this inoffensive animal that never appears in a horse; nor is the shape, when taken altogether, by any means so beautiful: His pace corresponds with his figure, and he is much more sluggish and inactive than the noble animal just now described. Notwithstanding all this, Asses would be of great value, if Horses were not so common, and if the Ass were as well taken care of, he would, in all probability, turn out to much greater advantage than he does at present.

But we must not forget that an Ass is not without many good qualities, for he seems to know his master, and can distinguish him from all others, though he has been ever so ill treated; he knows also the roads he has been accustomed to, and can find them out without a guide; he has good eyes, a fine smell, and an excellent ear. However, when he is overloaden he will hang down his head and ears, and when he is beaten more than ordinary, he will open his mouth and draw back his lips in a very disagreeable manner; if you cover his eyes he will not stir a step, and if he is laid down in such a manner that one eye is covered with grass, and you hide the other with any thing else, he will continue in the same situation without the least motion, and not so much as attempt to rise and free himself from his impediments.

A warm climate is most favourable to the growth of this animal: the ass produced in this country, is much inferior in size and beauty to those of Spain and other warm countries: in Guinea they are larger and more beautiful than even their horses: in Persia they have two kinds, the one slow and heavy, which is made use of for carrying burthens; the other, nimble, smooth, and stately, used chiefly for the saddle. They are managed as horses; and, like them, are taught to amble. They generally slit their nostrils to give them more room for breathing. Many of these are sold as high as forty or fifty pounds.

In the reign of queen Elizabeth there were no asses in this country: how soon after they might be introduced is uncertain. However they are at present naturalized in this, kingdom, where their utility becomes daily more universally experinced.

His gentleness, patience, and perseverance, are without example: he is temperate with regard to food; and eats contentedly the coarsest and most neglected herbage: if he give the preference to any vegetable, it is to the plantain, for which he will neglect every other herb in the pasture. In his water he is singularly nice, drinking only from the clearest brooks. He is so much afraid of wetting his feet, that, even when loaden, he will turn aside to avoid the dirty parts of the road.

He is stronger, in proportion to his size, than the horse; but more sluggish, stubborn, and untractable. He is healthier than the horse; and, of all other quadrupeds, is least infested with lice or other vermin, which is probably owing to the extreme hardness and dryness of his skin. For the same reason, perhaps, he is less sensitive of the goads of the whip, or the stinging of flies.

He is three or four years in coming to perfection; and lives to the age of twenty. or sometimes twenty-five years. He sleeps much less than the horse; and never lies down for that purpose but when he is much fatigued. The she-ass goes eleven months with young; and seldom produces more than one at a time.

The services of this useful creature are too often repaid by hard fate and cruel usage; and being generally the property of the poor, it partakes of their wants and their distresses: Whereas, by due cultivation and care in its education, the ass might be usefully and profitably employed in a variety of domestic purposes, and in many cases supply the place of the horse, to which only it is second, though generally degraded into the most useless and neglected of domestic quadrupeds.

THE ZEBRA.

The Zebra is one of the most elegant and beautiful, as well as the wildest and most timid animal in nature. It is chiefly a native of the southern regions of Africa, where vast herds of them are often seen by travellers feeding on those extensive, and almost interminable plains near the Cape of Good Hope.

The zebra is likewise said to be a native of some provinces of Barbary. In those vast forests where it resides, it has nothing to abridge its freedom; and, owing to its extreme shyness and caution, it is very seldom taken alive.

A few of them were some years since sent to Brazil, not one of which could be tamed; nor would they suffer a man to approach them, unless when they were completely muzzled and shackled; and though all imaginable caution was taken, one of them, having found means to effect his freedom, rushed upon his groom and bit him to death.

The zebra is somewhat inferior in size to the horse, but it is larger than the ass, and in figure rather resembles the mule than either. The head is large like that of the ass, the back strait, and finely rounded; the legs well placed, and the tail tufted at the extremity. The form of the body approximates to that of the horse, its posteriors are round and fleshy, and the skin soft, smooth, and close: but its distinguishing beauty lies in the regularity and elegance of its colours, which excite universal admiration: those of the male are white and brown, disposed in alternate stripes over the whole body, with such symmetry and exactitude, that they appear as though the rule and compasses had been employed on the occasion, and, at first sight, seem rather the effect of art than the genuine production of nature. These stripes are like so many ribbands laid all over the body and limbs, narrow, parallel, and distinct from each other.

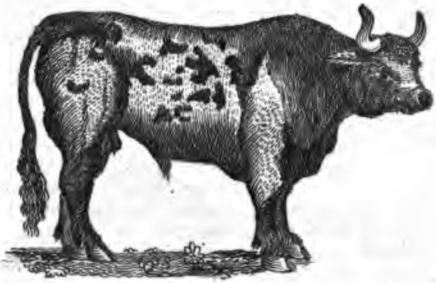
Writers on natural history have observed, that it is most probable this animal, by time and assiduity, might be brought under subjection. Resembling the horse in form, say they, it has no doubt a similitude of nature, and only requires the efforts of an industrious and skillful nation to be added to the number of useful domestics.

It is not now known what were the pains taken at first to reclaim the breed of horses from their original savage ferocity: it is highly probable that the latter made an equal opposition to the powers of man, who, however, finally subdued their spirit, and restrained their freedom.

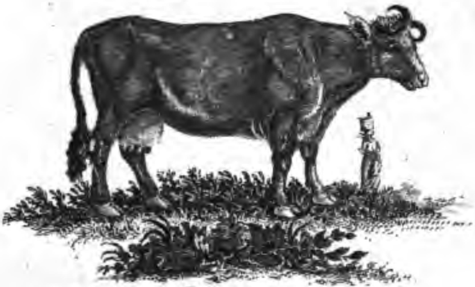
With regard to the zebra, it is a native of countries whose inhabitants have no other idea of the value of animals of the horse kind, but as they are good for food; neither the beautiful stature of the Arabian, nor the delicate colours of the zebra, have any allurements for people, who only consider the quantity of flesh, and not its conformation. The delicacy of its shape, or the painted elegance of its form, are no more regarded by those, than by the lion which makes it his prey. For this reason the zebra may hitherto have continued wild, because it is the native of a country, where there has been no successive efforts to reclaim it. All

Plate 3

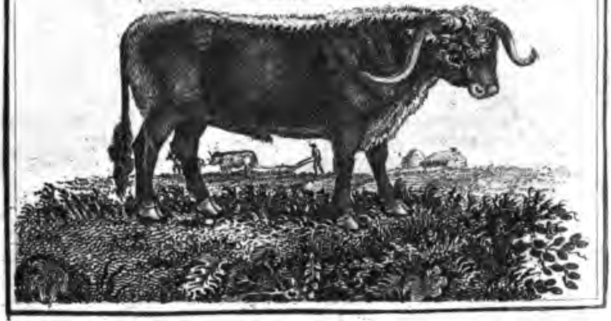
Bull



Cow



Ox



s hitherto instituted against the zebra, have rather gainst his life, than his liberty.

ggas ar wild Ass, an animal hitherto but little known, t much described, abound in the same country, and een mistaken for Zebras of the female kind; but are own to be a distinct species. They live in herds, and l to be extremely swift.

THE OX.* (*Plate 8.*)

x. and other herbiverous animals are not only the eful to man, but they are also maintained at a small . The ox is the most excellent in this respect, as res as much to the earth as he takes from it, and riches the ground on which he feeds.

the ox is not so proper as the horse, the ass, or the r carrying burthens, the form of his back and loins, onstration. But the thickness of his neck, and the of his shoulders point him out as an animal proper yoke.

se species of animals, which man has formed into d where the multiplication is the principal object, le is more useful than the male. The produce of is constantly renewed. The flesh of the calf is me and delicate. The milk is the food of children; elishes the most of our dishes, and cheese is the comod of the peasants.

ow arrives at the age of puberty in eighteen months, bull in two years. But they should not be admitted other till they are three years old. From three to art these animals are in their greatest vigour. After ither cows nor bulls are fit for any thing but to fatten slaughter, as at two years of age they are almost at ll growth. The length of their lives is almost like the greatest part of the other species of animals, a- ourteen years, and they seldom live above fifteen.

dullest and most idle animals are not those which the soundest, or the longest. The ox sleeps, but his is short and not very sound; for he wakes at the least He usually lies on his left side and that kidney is al- larger and fatter than the kidney on the right.

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word ox, in its common acceptation, denotes Black Cattle in general t regard to sex. In a more restricted sense, it signifies a castrated Bull.

the intestines, where the principal decomposition of the food is performed.

Chewing the cud is but a vomiting without straining, occasioned by the re-action of the first stomach on the food which it contains. The ox fills the two first stomachs, the paunch, and the bag, which is but a portion of the paunch, as much as he can. This membrane acts with force on the grass which it contains; it is chewed but a little, and its quantity is greatly increased by fermentation. Were the food liquid, this force of contraction would occasion it to pass by the third stomach, which only communicates with the other by a narrow conveyance and cannot admit such dry food, or, at least, can only admit the moister parts. The food must, therefore, necessarily pass up again into the esophagus, the orifice of which is larger than the orifice of the conduit, and the animal again chews and macerates them, imbibes them afresh with its saliva, and thus by degrees makes the ailment more moist. He reduces it to a paste, liquid enough for it to enter this conduit which passes into the third stomach, where it is again macerated beore it enters the fourth; and it is in this last stomach that e decomposition of the hay is finished, which is reduced o a perfect mucilage.

What chiefly confirms the truth of this explication is, that s long as the animals suck, and are fed with milk and other quid aliments, they do not chew the cud. They chew the ud much more too in winter, when they are fed with dry ood, than in summer, when they eat tender grass.

Good milk is neither too thick nor too thin. Its consisence should be such, that when we take a drop, it should preserve its roundness without running, and in colour it should be of a beautiful white. That which is inclinable to blue or yellow is not good. Its taste should be sweet, without any bitterness or sourness. It is better during the month May and during the summer, than in the winter; and it never perfectly good but when the cow is of a proper age, od health. The milk of young cows is too thick, and at of old ones during the winter is also too thick. The lk of cows which are hot, is not good, any more than that a cow which is near her time, or which has lately calved. the third and fourth stomach of the calf which sucks, ere are clots of curdled milk. These when dried in the r, serve to make rennet, or that well-known substance which coagulates milk. The longer the runnet is kept, the better it is, and it requires but a small quantity of it to make a great deal of cheese.

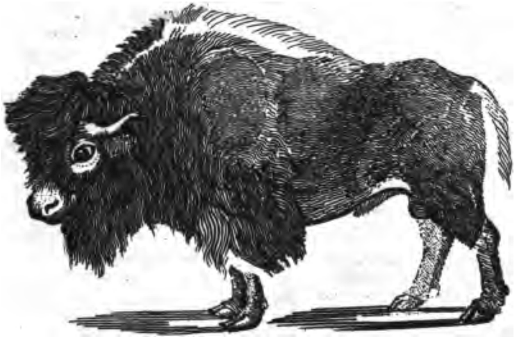
A Bull that is turned among cows ought to be large, well made and fleshy, with a black eye, fierce look, and open front; a short head, thick, short, black horns, long hairy ears, a big muzzle, a short strait nose, a fleshy thick neck, large breast and shoulders, a strait back, thick fleshy legs, a long tail well covered with hair, and firm gait. He ought to be of a middle age, that is between three and nine years old; he ought not to have above fifteen cows, though this is seldom observed.

Bulls, cows, and oxen, are apt to lick themselves, but mostly when they are quiet; and as it is thought that it hinders them from fattening, it is usual to rub all the parts of their bodies they can touch with their dung. When this precaution is not taken, they raise up the hair of their coats with their tongues, which are very rough, and they swallow this hair in large quantities. As this substance cannot digest, it remains in the stomach, and forms round, smooth balls, which is sometimes of so considerable a size, as to prevent their digestion. These knobs in time get covered with a brown crust, which is somewhat hard. It is, notwithstanding, but a thick mucilage, which by rubbing and co-action becomes hard and shining. It is never found any where but in the paunch, and if any of the hair gets into the other stomachs, it does not remain, but seems to pass with the aliments.

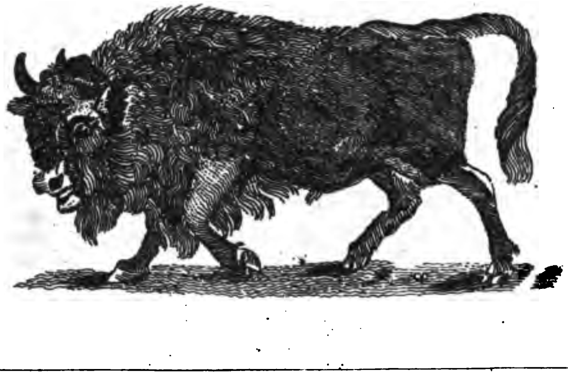
Animals which have incisive teeth, such as the horse and the ass, in both jaws, bite short grass more easily than those which want incisive teeth in the upper jaw. Hence if the sheep and the goat bite the closest, it is because they are small, and their lips are thin. But the ox, whose lips are thick, can only bite long grass; and it is for this reason that they do no harm so the pasture in which they feed, as they can only bite off the tops of the young grass. They do not stir the roots, and for this reason scarcely hurt the growth; but the sheep and the goat bite so close, that they destroy the stalks and spoil the roots. The horse chooses the most delicate grass, and leaves the largest to grow, the stalks of which are hard, The ox, on the other hand, bites these thick stalks, and by little and little destroys the coarse grass; so that, at the end of some years, the field in which the horse has lived becomes a very bad one, whilst that on which the ox has broused, becomes fine pasturage.

Plate 4

Biſon



White Scotiſh Biſon



THE BISON. (*Plate* 4.)

The Bison, or Wild-Ox, It is as big as a bull or ox, being maned about the neck and back like a Lion; and his hair hanging down under his chin, or nether lip, like a large beard; and a rising or little ridge down along his face, from his forehead to his nose, very hairy: his horns are large, very sharp, and turning towards his back, like those of a wild Goat on the Alps. It is of such great strength, that it can (if some writers may be believed) toss an horse and his rider. With its tongue, which is hard and rough like a file, it can draw a man to him; whom by licking he can wound to death. Its hair is red yellow, or black; its eyes very large and fierce. It smells like a musk Cat. Its flesh is very fat in summer-time, but not good to eat, being strong. The blood is thought to be the purest in the world, excelling in colour any purple.

THE WHITE SCOTTISH BISON. (*Plate* 4.)

The White Scottish BISON is maned about the neck like a Lion, but in other parts like a common ox. The animals of this kind once overspread the woods of Callender or Calder; but now they are all slain, except in that Scottish part which is called Cumirnal. The Bison is said to dread and abhor mankind to that degree, that he will not feed on any grass or herbs, if he can discern by his smell a man has touched them, at least for many days together. If he meets a man, he presently makes at him, fearing neither dogs nor spears, nor any kind of weapons. It is excellent food; and used formerly to be very acceptable to persons of the first rank.

The Bison, or animal with the hump, is found in all the southern parts of the world, though greatly differing from each other in size and form; the one without the hump, chiefly occupies the temperate and cold climates. The Ox, the Urus, the Bison and the Zebu, by whatever name they are distinguished, and though variously classed by naturalists, are the same; and however diversified in their appearance and property are descendants of one common stock; of which the most unequivocal proof is, they all mix and breed with each other, and the hump, which is only an accidental characteristic, gradually declines; and in a few generations no vestige of it remain.

HIPPOPOTAMUS OR SEA-HORSE. (*Plate 5.*)

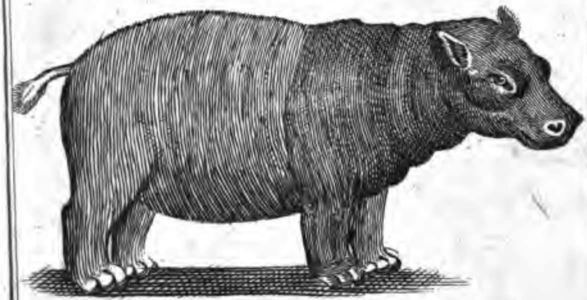
Authors have differed materially in their accounts of the size of the sea horse. We have been informed that a male has been found measuring seventeen feet in length, from the snout to the insertion of the tail; fifteen feet in circumference, and seven in height; the legs about three feet long, and the head almost four. It is added, that twelve oxen were found necessary to drag it out of the water, after it has been shot, and that its hide has been a sufficient load for a camel.

Be this as it may, the general size of this enormous creature seems to be equal to the rhinoceros, and only inferior to that of the elephant.

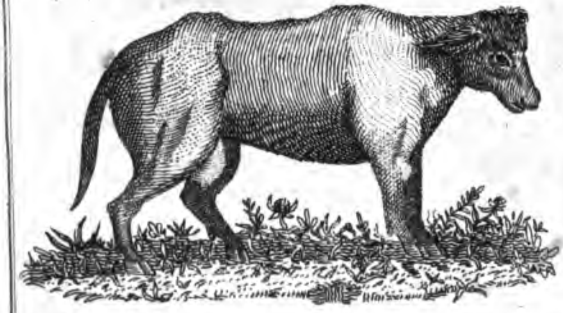
The sea horse is a native only of the torrid regions, and is frequently to be found in the large rivers, which intersect the solitary forests of the interior parts of Africa, from the Niger to the Cape of Good Hope, but is found in none of the rivers that run into the Mediterranean, except the Nile.

From the remoteness of its situation, and its peculiar habits and disposition, great difficulties have always attended a complete investigation of this enormous animal; but from the accounts of the best informed naturalists we might collect, that its body is uncouthly shaped, extremely unweildy, fat, and round, the legs short, clumsy, and thick, the feet of a singular construction, with hoofs divided into four parts, or toes, unconnected with those kinds of membranes peculiar to animals designed by nature to frequent the water. The head is very large, and the mouth hideously wide; the upper mandible, according to Ray, being moveable, like that of the crocodile. The teeth, which are almost as hard as steel, are of a prodigious size, one of the grinders having been known to weigh three pounds, and upwards, and the tusks, or canine teeth, of the lower jaw, which are much the largest, upwards of six. The front-teeth of the lower jaw are exceedingly strong, and project forward almost horizontally: the nostrils are small, the lips very broad and thick, and beset with scattered tufts of stout bristles: the eyes are black, and small in proportion to the head, as are likewise the ears, which are lined with a soft downy hair: the tail is about a foot in length, thick at the base, but flattened at the end, furnished with a scanty covering of stiff bristles, and marked by large circular wrinkles.

Plate 5



Sea Horſe



Mountain Cow

The whole of the body is cloathed with a short hair, which is more scanty on the lower parts than on the upper.

When dry the colour of the sea horse is an obscure brown, or dusky; but when just emerged from the water, its back and upper parts appear of a bluish, or slate-coloured hue, and the belly of a clear flesh-colour, the skin shewing itself through the hair.

Its motion on land is slow and extremely awkward; but it can run, when pursued, till it reaches the water, into which it plunges. and, diving, walks at the bottom with great ease and swiftness.

Its voice is loud, and singular, forming a kind of broken and interrupted roar, between that of the bull, and the braying of the elephant: this sound it most frequently utters, when it rises to the surface of the water to take breath, which it is often forced to do, when it might be heard at a great distance, and by this noise the hunters are directed to the place of his retreat.

The sea-horse, though furnished by nature for war, is extremely mild in its manners, and little disposed to hostilities. According to Goldsmith, when excited by the calls of hunger, three or four of those animals are commonly seen at the bottom of a river, near some cataract, forming a kind of line; and seizing upon such fish as are forced down by the violence of the stream, where they pursue their prey with great swiftness and perseverance, swimming with much force and remaining at the bottom for thirty or forty minutes without rising to breathe. They traverse the bottom of the stream, as if walking upon land, making a terrible devastation wherever they find plenty of prey. When there is a deficiency of food in the water, they come ashore, seldom forsaking the margin of the river, unless forced by famine, in which case it proceeds up the country to the higher ground, where it commits dreadful havock among the plantations of the natives, being particularly fond of the sugar cane, rice, and millet; it will also feed on the roots of trees, which, by means of huge tusks, it is enabled easily to remove.

When the natives see their possessions in danger of being destroyed, by the approach of this formidable animal, they kindle large fires, and raise dreadful outcries, in addition to the noise of drums, in order to scare him back to his aquatic retreats; in his course to which, especially if he be irritated or wounded, nothing can oppose him: he overturns every thing in his way, and crushes men and animals under his feet. The principle of self-preservation alone, however, seems to regulate his movements. If unmolested, he never commences an attack, but should an affront be offered him, whether accidental or intended, his vengeance often proves fatal: it is asserted that he has been known to seize a boat in his teeth, and tear out its bottom; at other times, to rise under it, and over-set it, with a number of men therein.

Notwithstanding the opinion above cited, Shaw assures us, that the hippopotamus is not carnivorous, rejecting not only fish, but all kinds of animal food whatever; nor does he ever drink salt water, though he is sometimes seen in the sea, at the mouths of great rivers, where he is mostly fond of exercising at large.

Hyppopotami are sometimes seen going in large companies at a great distance from the banks of their river, in search of prey; and after being satiated, they return to the vicinity of the waters, where they repose in the small reedy islets. In those spots they generally bring forth their young, having only one at a time, to which they are said to be extremely indulgent, nursing it for a long time with the greatest care and attention.

When caught young it is capable of being rendered very tame, and treated like the most common domestic animal, without shewing any inclination to regain its liberty, or the least disposition to mischief or revenge, on any occasion.

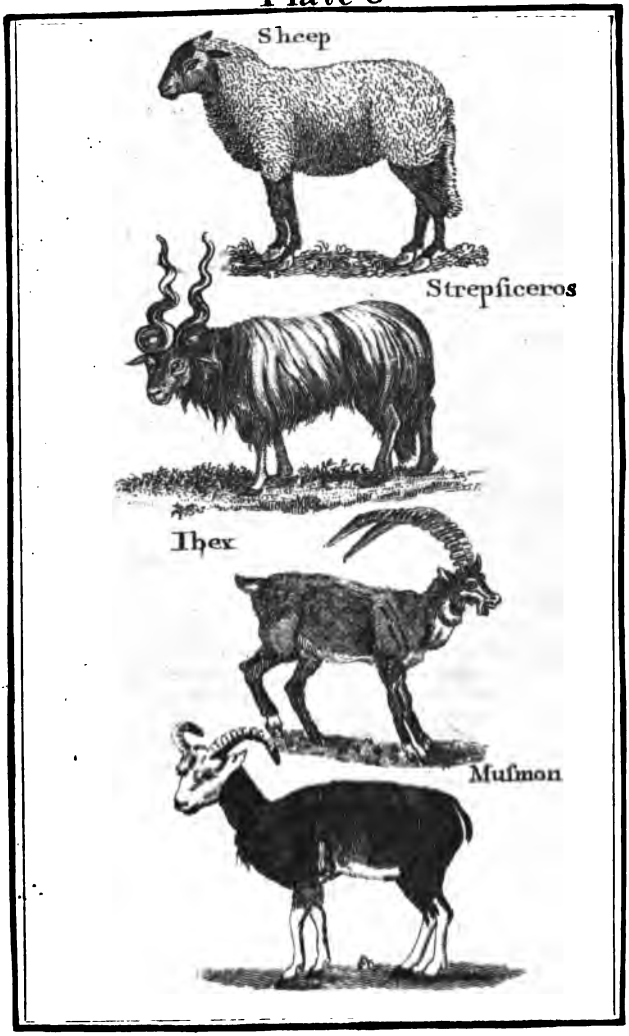
The head and belly are the only vulnerable parts of this animal: the skin being so thick and tough as to resist a musket bullet, and turn the edge of a sabre. This skin is dried by the Africans, who form it into bucklers and shields.

It is most frequently killed on account of its tusks, which are considered as highly valuable for their superior hardness, and their peculiar property of never turning yellow, as is the case with ivory and all other bone; for this reason they are very costly and much esteemed by dentists for repairing the ravages of time or accident on female beauty.

They are sometimes shot, or killed with the harpoon, but as this method is not always successful, the natives commonly prepare pitfalls for them, by the side of the rivers, by which means they are effectually secured.

Their flesh is reckoned as a great delicacy, and their fat, may be applied to various useful purposes.

Plate 6



THE MOUNTAIN-COW. (*Plate* 5.)

It is as big as a bullock of two years old, and shaped like a cow, but has a much larger head, without horns; her nose is short; her eyes are round, full, and of a prodigious size. She has great lips, and her eyes are in proportion to her head; her neck is thick and short, and her legs shorter than ordinary. She has coarse thin hair, and a pretty long tail, but no bunch of hair, at the end: her hide is near two inches thick, and her flesh red, and very wholesome meat. This beast never feeds in pasture like other Cows, but upon long grass, or moss, on the banks of rivers When her belly is full she lies down to sleep by the water-side, and at the least noise slips into the water, where sinking down to the bottom, though very deep, it is said she walks as on dry ground. She is bred near the Bay of Honduras in America.

THE SHEEP. (*Plate* 6.)

Of all Animals, the sheep is the most weak, simple and innocent: it has many enemies, and its life is sought by every beast of prey, in preference to any other. It is the most defenceless of creatures.

The ram has but feeble arms; his courage is nothing but a petulance peculiar to himself, which is destroyed by castration. Weather sheep are more fearful than ewes; as the smallest noise, to which they are unaccustomed, is sufficient to make them fly and to cleave close to one another. This fear is accompanied with the greatest ignorance; for though they are sensible of danger, they do not know how to escape it; and in the greatest storms they will not change their situation, except one of them leads the way and then the rest follows.

This animal, is so cowardly in itself, is the most precious and useful to mankind; supplies our greatest necessities, furnishing us at once with food and cloathing. Nay the very milk, skin, bowels, bones, and even the dung have their peculiar excellencies.

These simple animals are of a very weak constitution, travelling soon exhausts them; and when they run, they pant and are soon out of breath. The great heat of the sun is as disadvantageous to them, as too much moisture, cold and snow. They are subject to many disorders, the greatest part of which are contagious; too much fat sometimes kills them, and always prevents them from having lambs. They suffer a great deal in the time of yeaning, have frequent abortions; and require more care than any other domestic animals.

At one year old, sheep lose the two front teeth of the lower jaw; and almost every one knows that they have no incisive teeth in the upper. At eighteen months, the teeth adjoining the two first that fell, fall also; and, at three years old, they are succeeded by others. They are then even, and tolerably white; but, in proportion as the animal grows older, they become uneven and black.

Sheep carry their young five months, and drop them at the beginning of the sixth. They usually produce but one lamb, and sometimes two. In warm climates they yean twice, but in cold ones only once a year.

Ewes have plenty of milk the first five or six months after yeaning, which makes tolerable food for children and poor people in the country; it also makes good cheese, especially when it is mixed with cow's milk.

In dry soils, and high grounds, where wild thyme and other odoriferous herbs abound, the flesh of the sheep is of a much better quality than when it is fed in plains and humid valleys, unless these plains, are sandy and near the sea; then the herbs imbibe a saltness, which gives the mutton a most agreeable relish.

Nothing contributes more to fatten sheep, than to give them plenty of water, and nothing prevents this advantage so much as the burning heat of the sun.

Another considerable advantage arises from sheep, by enclosing them on the ground we wish to improve: the dung, urine, and heat of which, will, in a little time, enrich the most exhausted, cold, and in fertile land. A hundred sheep, in one summer, will enrich eight acres for six years.

Those animals with large long tails, which are so common in Africa and Asia, and to which travellers have giving the name of Barbary sheep, appear to be of a different species from ours, as well as the lambs of America.

THE STREPSICEROS (*Plate 6.*)

Is a kind of sheep bred in the island of Crete, in the Mediterranean is not unlike our common Sheep, its horns excepted, which grow like the Unicorn's, being curled about with wreaths. This creature is about as big as a hart, having likewise red hair.

THE MUSMON. (*Plate* 6.)

Which is neither Sheep nor Goat, but has many marks of both, and forms the link between the two kinds. It is, curious to observe, that Nature, in all her variations, proceeds by slow and almost insensible degrees, scarcely drawing a firm and distinguishing line between any two races of animals that are essentially different, and yet, in many respects nearly allied to each other. In all transitions from one kind to the other, there is to be found a middle race, that seems to partake of the nature of both, and that can precisely be referred to neither. Thus it is hard to discover where the sheep kind ends, or the goat begins. The Musmon though covered with hair, it bears a strong similitude to the Ram: Its eyes are placed near the horns, and its ears are shorter than those of the Goat; its horns resemble those of the Ram, in being of a yellow colour and a triangular shape; they likewise bend backward behind the ears: In some they grow to an amazing size, measuring above two yards long. They often maintain furious battles with each other, in which their horns are frequently broken off. The general colour of the hair is reddish-brown; the inside of the thighs and belly is white tinctured with yellow; the muzzle and inside of the ears are of a whitish colour tinctured with yellow; the other parts of the face are of a brownish-grey.

The Musmon is found in the wild and uncultivated parts of Greece, Sardinia, Corsica, and in the desarts of Tartary; where it maintains itself, by force or swiftness, against the attacks of all rapacious animals.

It has been known to breed with the Sheep; and, from that circumstance, is supposed, by M. Buffon and others, to be the primitive race. The female of this species is rather less than the male; and her horns never grow to that prodigious size.

THE IBEX (*Plate* 6.)

According to Buffon, is the parent stock from which our domestic goat is descended; and, indeed, the former is very similar to the latter in the shape of its body, but differs considerably from it in the shape of its horns, which are much larger. It is generally of a dark brown colour, intermixed with a little grey; a streak often runs along the top of its back; the belly and thighs are of a delicate fawn colour.

It inhabits the highest Alps of the Grisons' country, and the Vallais; and is also found in Crete. They are very wild, and difficult to be shot, as they always kept on the highest points of the rocks. The chase of them is attended with great danger: Being very strong, they often turn upon the incautious huntsman, and tumble him down the precipice, unless he have time to lie down, and let the animal pass over him. They bring forth one young at a time, seldom two; and are said not to be long-lived.

THE DOMESTIC GOAT. *(Plate 7.)*

This lively, playful, and capricious creature occupies the next step in the great scale of Nature: and, though inferior to the sheep in value, in various instances bears a strong affinity to that useful animal. The goat and the sheep will propegate together: The he-goat copulates with the ewe, and the ram with the she-goat; the offspring likewise is prolific.

The goat is a much more hardy animal than the sheep, and is in every respect more fitted for a life of liberty: It is not easily confined to a flock, but chuses its own pasture, straying wherever its appetite or inclination leads: It chiefly delights in wild and mountainous regions, climbing the loftiest rocks, and standing secure on the verge of inaccessible and dangerous precipices; although, as Ray observes, one would hardly suppose that their feet were adapted to such perilous atchievements; yet, upon a nearer inspection, the wonder ceases, and we find that nature has provided them with hoofs well calculated for the purpose of climbing, being made hollow underneath, with sharp edges, like the inside of a spoon, which prevents them from sliding off these rocky eminences.

The Goat is an animal easily sustained, and is chiefly therefore the property of those who inhabit wild and uncultivated regions, where it finds an ample supply of food from the spontaneous productions of Nature, in situations inaccessible to other creatures. It delights rather on the heathy mountains, or the shrubby rock, than the fields cultivated by human industry. Its favourite food is the tops of the boughs, or the tender bark of young trees. It bears a warm climate better than the Sheep, and frequently sleeps exposed to the hottest rays of the sun.

Plate 7

Wild Goat

Common Goat

The milk of the Goat is sweet, nourishing, and medicinal, being found highly beneficial in consumptive cases: it is not so apt to curdle upon the stomach as that of the Cow. From the shrubs and heath on which it feeds, the milk of the Goat acquires a flavour and wildness of taste very different from that of either sheep or cow, and is highly pleasing to such as have accustomed themselves to its use: it is made into whey for those whose digestion is too weak to bear it in its primitive state.

In many parts of Ireland, and in the Highlands of Scotland, their Goats make the chief possessions of the inhabitants; and in most of the mountainous parts of Europe, supply the natives with many of the necessaries of life: they lie upon beds made of their skins, which are soft, clean, and wholesome; they live upon their milk, and oat bread; they convert part of it into butter, and some into cheese. The flesh of the kid, which they do not allow themselves to taste is considered by the city epicure as a great rarity; and, when properly prepared, is esteemed by some as little inferior to venison.

The Goat produces generally two young at a time, sometimes three, rarely four: in warmer climates, it is more prolific, and produces four or five at once; though the breed is found to degenerate. The male is capable of propogating at one year old, and the female at seven months; but the fruits of a generation so premature, are generally weak and defective: their best time is at the age of two years, or eighteen months at least. The Goat is a short-lived animal, full of ardour, but soon enervated. His appetite for the female is excessive, so that one buck is sufficient for one hundred and fifty females.

THE WILD GOAT. (*Plate 7.*)

The wild goat inhabits most countries but particularly the Alps, Italy, the Lybian mountains, &c. those of the last mentioned parts are of a very large size their horns are bent backwards to their shoulders otherwise they resemble the common goat. They are uncommonly active in climbing and leaping, sometimes they will leap to a very great distance from the top of one crag to another, and at other times from the top of great precipices to crags beneath and with such dexterity that they seldom or ever receive hurts from their falls. The care of their young takes their particular attention and what is remarkable that care is returned with becoming gratitude by the young nursing their dam when turned old by bringing her food and water with regularity. The colour of the wild goat in the summer time is red and in the winter brown. The male does not differ from the female in appearance as the horns, colour, and proportion are exactly alike.

THE CHAMOIS GOAT.

The Chamois Goat is an inhabitant of alpine countries, where he pampers himself with the highest flavoured plants, culling their flowers and tenderest buds. His blood thus becomes so hot, that the summers sun is oppressive to him, and he seeks for a retreat under masses of congealed snow and ice, in the caverns among the rocks, or in the depth of the gloomy forests that climb the northern declivities of the most scabrous mountains. In winter, he descends into the lower forests, and contents himself with pine leaves, and such green or dry herbs as he can procure by scratching with his feet among the snow. The forests, however, that he most delights in, are those that abound with rocks and precipices. Hence the hunting of the chamois is very difficult. Sometimes they are hunted, like stags and other animals, by posting hunters at the narrow passages, while others beat about, and raise the game. But the mode most in use is for the hunters to watch their opportunity behind rocks or stones, and shoot them with musket balls. In this case, care must be taken that the wind blows in the face of the hunter; for, if he hunts with the wind, the chamois is so acute in the sense of smelling, that, at the distance of half a league, he will perceive the scent. When this happens, or hears any thing which he does not see, and which alarms him, he whistles, or blows, with a force that makes the rocks and forests re-echo to the sound. He pauses for a moment, looks around him on every side, and forthwith begins to whistle from time to time. He continues this whistling and watching till his agitation is extreme. He then strikes the ground with his feet, leaps upon the highest stones, looks anxiously around, hurries from one eminence to another, till, discovering the object of his fear, he flies off. The skin of the Chamois, when dressed, is a strong and supple leather, in universal request for riding breeches and gloves.

THE GOAT OF ANGORA.

The Goat of Angora is remarkable for its long, thick, and glossy hair, which is of a dazzling whiteness, and is highly valued as a profitable article of commerce; for of this are made those beautiful cloths, well known among us by the name of Camblets. These animals inhabit the rocky mountains of Pontus, where they experience a considerable degree of cold, and, as well as the sheep of Tibet, so famous for the fineness of its wool, from which the high-priced Indian shawl is made, might in all probability, thrive as well in Britain as in their native country. Both these valuable quadrupeds live in a climate which, in winter, is much more severe than ours. They might, undoubtedly, be transplanted into this country with success, and if once introduced, would not only tend to beautify and enliven the rugged scenes of our most bleak and barren mountains, but render the uncultivated and unproductive parts of the islands a source of utility and wealth. In Portugal there is also a breed of fine large goats, remarkable for their abundance of milk, of which some will yield not less than six quarts per day. These also, if introduced into some of the mountainous and barren tracts of this island, might be an useful acquisition.

These are the principal varieties of the goat kind, although we might add a number of others, such as the African goat, which is much smaller than the common kind. In America, there is also a small breed of goats, nearly similar to those of Africa, and which, according to Buffon, was transplanted from thence into the new continent. This, indeed, is very probable, as it is certain, that the goat, as well as every other domestic animal, was unknown in America at the time of its discovery by the Spaniards.

From what has been already said of the horse, the ass, the cow, the sheep, and goat, you will easily perceive, that, to trace the varieties of a single species, through all its shades of discrimination, would be both an useless and an endless task; the same might be observed of most other animals. Difference of climate, and of the quality and quantity of aliment, influence in some degree all animal life; and a thousand other circumstances many of which are visible, and others unknown, concur to produce innumerable varieties in each species.

THE CAMELEOPARDAL (*Plate* 8.)

When standing erect, measures in height, to the top of the head, seventeen or eighteen feet; but its hind-legs are little more than half as long as the fore ones, a disproportion which prevents it from running swiftly, and renders its pace waddling and inelegant. Its neck is not less than seven or eight feet in length, and decorated with a short mane: its head is also adorned with two perpendicular horns, covered with hair, and tufted at the ends with a circle of short black hairs; its ears are long, and its eyes brilliant and large. The colour of this animal is a light grey, which in the male is interspersed with spots of a dark brown over the whole body, and of a pale yellow in the female. It is a timid and gentle creature, being equally destitute of the means of attack and defence, and by the disproportion of its parts, ill calculated for flight, which is probably the cause of its being so rare. It lives wholly on vegetables, ruminates, and is cloven-footed.

This singular rarity of animated nature is found only in the most sequestered regions of Africa, (M. Buffon says that it is also a native of India) and is very seldom exhibited in Europe. It was, however, known to the Romans before the Christian æra, and exhibited in their public games. History informs us, that Pompey produced ten of these extraordinary animals at once, in one of the amphitheatres of Rome, a striking instance of the enormous expence with which the leading men among the Romans used to amuse and influence the citizens, by the splendour of there public spectacles, and the gratification of popular curiosity. The cameleopardal has, indeed, at all times been regarded as a wonderful production of nature, and is well calculated to excite our admiration of that Almighty and All-creating Power, which has replenished the earth with life in such a variety of forms.

THE REIN-DEER (*Plate* 8.)

This extraordinary quadruped is a native of the icy regions of the North, where, by a wise and bountiful regulation of Providence, which diffuses the blessings of the creation, in some degree, over every part of the habitable world, it exists for the support and comfort of a race of men, who, inhabiting a country, where the beauties of nature are unknown, and dreary sterility even reigns, would find it im-

Plate 8

Camelopardal

Rein Deer

possible to subsist among their frozen lakes and snowy mountains, without the advantages which they derive from this inestimable domesticated animal. In temperate regions, the unbounded liberality of nature furnishes a profusion of conveniences and comforts, and a variety of supplies for almost every want; but to the Laplander, in his hyperborean abode, the horse, the cow, the sheep, and the goat, are all unknown. The rein-deer, however, supplies the place of all these useful animals. From this single quadruped the Laplanders, and other inhabitants of these frozen regions, derive all those comforts that can render existence supportable in that inhospitable climate. It supplies the place of the horse, in conveying them over tracks that would otherwise be impassable; that of the cow, in affording them milk; and that of the sheep, in clothing them, not with its fleece, but with its skin: its very sinews supply them with thread, and there is scarcely any of this animal that is not, in some degree conducive to their comfortable existence.

The rein-deer, in Lapland, are of two kinds, the wild and the tame; and the former being the strongest and most hardy, the latter are frequently turned into the woods in order to produce a mixed breed, which is generally preferred, especially for drawing the sledge, to which they are trained at an early age. They are yoked by a collar, from which a trace passes under the belly to the fore-part of the vehicle. These carriages are extremely light, and covered at the bottom with a rein-deer's skin. The person, who sits on the sledge, guides the animals with a cord, fastened to is horns, and drives it with a goad. The wild kind, when yoked sometime prove refractory, turn against their master, and strike so furiously with their feet, that he is obliged to cover himself with his sledge, until the enraged creature has exhausted his fury; but the tame ones are active and patient. A Laplander will, in this manner, travel about thirty miles a day, without forcing the rein-deer to make an extraordinary effort. This mode of travelling can be used only in the winter, when the country is covered with snow; and though it is expeditious, it is troublesome and sometimes dangerous.

As the rein-deer constitutes the sole riches of the Laplander, and is the source of his comforts, it may reasonably be supposed, that a constant attention to its preservation is his principal employment. As soon as the summer commences, the rein-deer are removed from the low pastures, where they would be constantly tormented by the insects, generated in the woods and morasses, and driven up to the mountains, where they are less incommoded. The gnat and gad-fly are their greatest and most fromidable enemies. Every morning and evening during the summer, the herdsman returns to the cottage with his deer to be milked; and large fire of moss is made, for the purpose of driving off the gnats by the smoke. The quantity of milk, afforded in a day by one rein-deer, is about a pint, and it is sweeter and more nutritive than that of the cow. The female commonly brings forth two young ones at a birth, and the time of gestation is eight months. At four years old they are trained to labour, and continue serviceable about five years. The period of their natural life is fifteen or sixteen years; but they are commonly killed for their flesh and their skins, about the age of eight or nine.

The rein-deer is found wild in the northern parts of America, and abounds in the vicinity of hudson's Bay. It is also common in all the northern regions of Europe and Asia, from Lapland to Kamtschatka. Several of the Laplanders possess herds of them to the number of five or six hundred, and some of the richest of the Kamtschatdales are said to have several thousands.

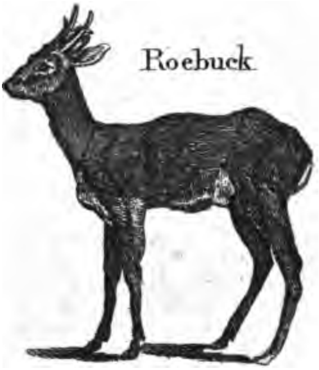
THE ROEBUCK. (*Plate* 9.)

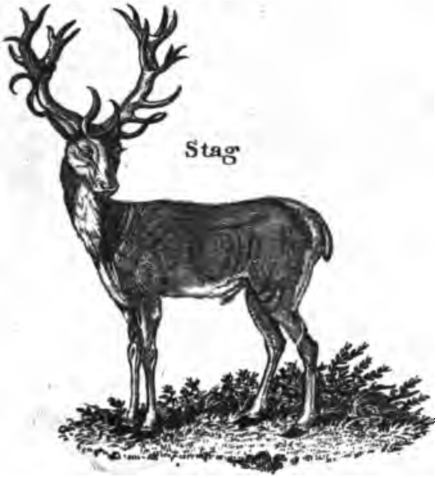
Is the smallest of the deer kind. Though formerly common, the breed is nearly extinct in this country; but in the mountainous parts of Scotland it yet abounds. The form of this animal is elegant, and its agility astonishing: it bounds seemingly without effort, and runs with great speed: in courage it is at least equal to the stag, and its subtle artifices, when hunted, are proofs of its cunning: it turns repeatedly, till it has, by its various zig-zags, entirely confused the scent. The crafty animal thus confounds the dogs, until they are completely bewildered. The roebucks do not associate in herds, like other deer, but live in seperate tribes. The female goes five months and a half with young; it comes to perfection in two, and lives about fifteen years.

THE STAG. (*Plate* 9.)

The Stag is one of those mild, innocent animals, which seems as if he was created solely to adorn and animate the solitude of the forest: and to occupy, remote from man,

Plate 9





the peaceful retreats of Nature. His light and elegant form, his flexible yet nervous limbs, his head rather adorned than armed, his grandeur, swiftness, strength, &c. sufficiently distinguish him from the rest of the inhabitants of the forest.

The received indication of the age of the Stag, is the regular growth of the antlers, which are annually shed, like the branches of trees, about the end of February, or early in March, the old Stags losing their's first. The first year only a small protuberance is perceivable; and then he is called a hind-calf; the next year a strait single horn puts forth, from which the animal receives the appellation of a knobber; the third year two antlers spring up, whence he acquires the name of a brock or pricket; the fourth year produces three, when he is termed a staggard; and the fifth year four, or which period he acquires the name of a Stag. The horns do not acquire due solidity and firmnes, till they are arrived at full growth; then the soft downy covering drying up, he rubs it off against the trees, after which they acquire a kind of polish, which adds to the grace and beauty of the whole head. The animal is said to suffer much pain during the growth of the horns, which is about three months, in which interim he retires in the deepest recesses of the forest to avoid the insults' with which in this state he is not able to contend, and to shun the attacks of swarms of flies. which perpetually torment him.

The figure of the Stag, though much larger than the fallow deer, is peculiarly light, delicate, and elegant; his eye is brilliant, and sight acute; his hearing is equally perfect; and he is susceptible of the smallest noise at a distance.

The usual colour of the English Stag is a dusky red, the principal part of the face is black, which continues over the forehead in a broad stripe to the bottom of the neck. Buffon says the most common colour of the Stag is yellow; through there are many found of a brown, and many of a red colour: white Stags are much more uncommon, and seem to be domesticated Stags.

He approaches the covert with the greatest caution and circumspection. If not alarmed, he marches forward with a stately step, and with the greatest deliberation; but alarmed by the least stir among the bushes, he erects his ears and mane, and starts off with the most incredible swiftness, and few hedges. or other fences, are capable of obstructing his flight. The neck is slender, and the passage of the throat very narrow; and though he chews the cud, it is with difficulty returned from the stomach, which is not effected without a strained and convulsive hiccup.

The Stag is gregarious: force alone can detach him from the herd to which he belongs. He is extremely delicate in choice of pasturage, and prefers the herbage of the most luxuriant vallies. Neither the broadest lakes or the most rapid rivers obstructs his progress: swimming with great grace and strength, he continues long in the water with little appearance of wearisomeness or fatigue

The Stag engages his rival wherever he meets him, with the utmost degree of courage and desperation, especially in protecting the female.

THE FALLOW-DEER.

The Fallow Deer is less than the Stag, and has palmated horns. In other respects, his form and manners are the same; yet does the Fallow-Deer, though he inhabits the same forests, never associate with the stag. The colours of this species are various; reddish, dark-brown, spotted, and often white. Venison, or the flesh of the fallow-deer, is in high estimation, is delicate and nourishing food; hence herds of them are often kept in parks prepared for their reception. If the herds be large, they divide themselves into smaller parties, among which contests frequently happen; they then attack one another, and in these trials of skill, exhibit wonderful proofs of order and obstinacy. In the rutting season, he is not so much infuriated as the stag, but is frequently involved, by rivalship, in terrible conflicts. The doe is never furnished with horns.

THE ELK. (*Plate* 10.)

The Elk is the largest animal of the deer kind, and found in the northern woody regions of Europe, Asia, and America. Its limbs are so remarkably long, and its neck so short, that, when it graises, it is always against the ascent. It lifts its feet very high when it walks, and will step with ease over a gate five feet high. This length of legs renders its gait singular and aukward; but its trot, though shambling, is yet exceedingly swift; and it is remarkably well formed for wading into rivers, or lakes, in search of water plants. Its most common abode is in woods, where it browses the boughs of trees; and it always carries its head to a horizon-

Plate 10

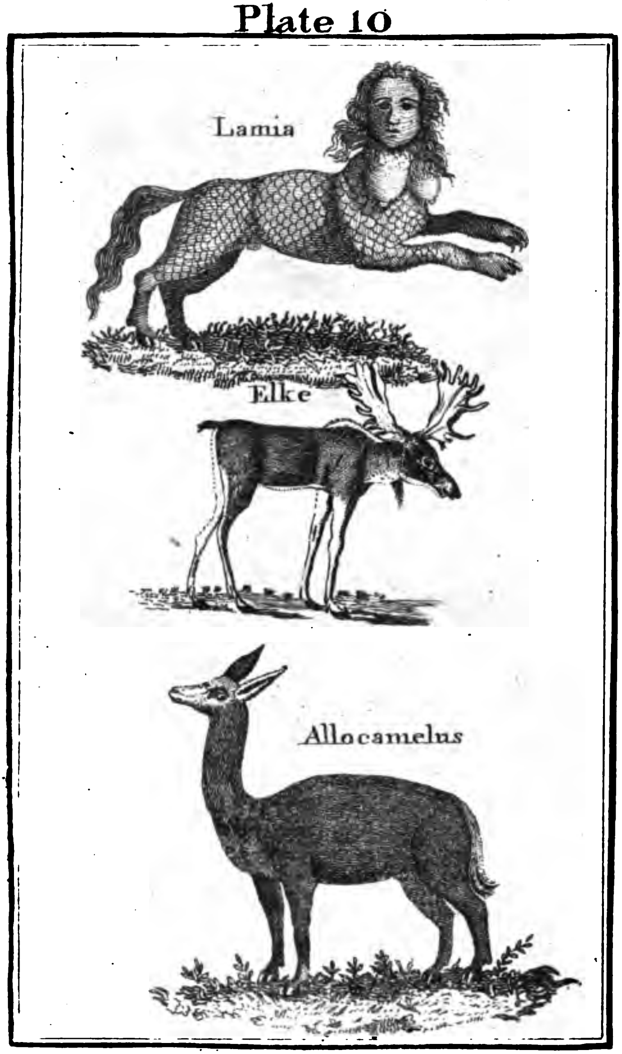
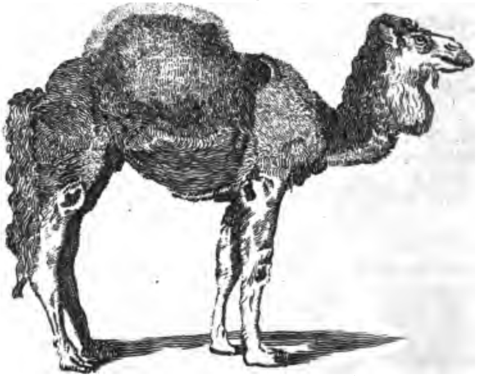
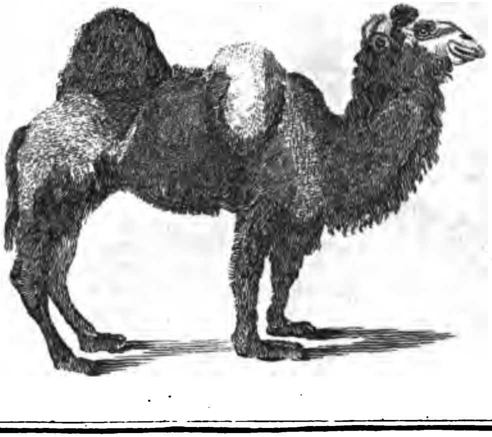


Plate 11

Camel



Dromedary



tal posture, lest its large palmated horns should be entangled among the branches. It is mild and inoffensive, except in the rutting season, or when it is wounded, then it will turn upon its enemies, and make a vigourous defence with its horns and hoofs.

THE LAMIA. *(Plate 10.)*

Though doubted of by many writers, is by others thus described. The Lamia is the swiftest of all four-footed creatures, so that its prey can seldom or ever escape it. It is said to be bred in Lybia, and to have a face and breasts like a very beautiful woman, and its body resembling in shape that of a horse, its fore feet resembling those of a lion, and hind ones resembling those of an ox. Its body is covered all over with scales.

THE ALOCAMELUS. *(Plate 10.)*

The Alocamelus is a native of Peru: it is about two yards in height, and five feet in length; its ears resemble those of the mule, the colour of its neck is white the other parts of its body are yellow.

THE CAMEL. *(Plate 11.)*

Is a native of Arabia, and is chiefly confined to that and the adjacent countries, where it has, from time immemorial, been used to traversing those immense deserts of parched sand, which are impassable to every other quadruped except the dromedary, which, although distinguished by a different name, is supposed to be originally of the same race.

The camel is to the Arabian what the rein-deer is to the Laplander, and supplies the place of the horse, the cow, and the sheep. Its milk is rich and nutritive; its flesh when young is excellent food, wholesome, and invigorating; and its hair, or fleece, which falls off always in the spring, is manufactured into fine stuffs, and almost every article necessary for clothing, bedding, and the covering of their tent. To comprehend the value of the camel, in those regions where perpetual draught and sterility reign, we must figure to ourselves a country without verdure and without water, where a clear sky and burning sun above, from which no friendly shade affords a shelter, parches every living creature with intolerable thirst, while an immense expanse of scorched sands beneath presents to the eye a dreary scene of barren uniformity, in which no object reminds the traveller of the existence of animated nature. Such are those immense deserts, which the camel and the dromedary alone can traversed It is, therefore, no wonder, that the Arabs guard the camels as an inestimable present from Heaven, a sacred animal. without the aid of which he could not subsist in those frightful deserts, which secure his independence, and surround him with an impregnable rampart.

In Turkey, Arabia, Persia, and Egypt, their whole commerce is carried on by means of those useful animals. The camel, in these countries, furnishes the most expeditions and the cheapest mode of conveyance. Merchants and travellers form themselves into numerous bodies, called caravans, in order to be able to protect themselves from the assaults of the formidable banditti which infest the borders of the desart. The usual rate of travelling in these caravans, is about twelve or fifteen miles per day. each camel carrying about four hundred weight, although the very large and strong ones can carry above twice as much. They are unloaded every night, and suffered to feed at liberty. If they are in a part of the country where there is pasture, they eat enough in one hour to serve them twenty-four; but in those journies they seldom find any pasturage, and happily, delicate food is not necessary to them. Thistles, nettles, furze, and all those coarser vegetables, which other animals reject, furnish to the camel a dainty repast.

Although the ordinary rate of travelling on those commercial journies, in which the route is frequently of seven or eight hundred miles, be no quicker than it is here described their prebatory expeditions are differently conducted. The camel, as well as his master, is trained to these scenes of desultory warfare, and by every art inured to hunger, thirst and fatigue. The plundering Arab will, in one day, if pursued, pass over a tract of desert of fifty miles. In this manner he will travel in these dreary solitudes; and during all that time of excessive fatigue, the camels are never unloaded; only a single hour of repose, and a ball of paste, for food, is allowed them each day. In this manner they often journey eight or nine days without meeting with any water, and during all this long space of time they can travel without drinking, while they carry water mostly in leather bags for the use of their masters. It is hence evident, that all the armies in the world would be inadequate to the pursuit of a troop of Arabs, and would infallibly perish should they persist in such an attempt.

It is somewhat extraordinary, that the camels, when they arrive in the vicinity of a spring, or pool of water, discover it by its smell at the distance of more than a mile. Thirst then excites them to redouble their pace, and when arrived, they drink as much as serves them during the rest of their journey, even should it continue some weeks, which is not unfrequently the case.

Of all the quadrupeds, with which the earth is replenished the camel is the most tame and submissive: he kneels down to be loaded and unloaded, and when overburdened, it makes the most piteous complaints, without ever offering the least resistance to his oppressor. If, however, his patience be extraordinary, it is much to be feared that, under the hand of relentless man, his sufferings are sometimes extreme.

Camels have a considerable share of intelligence; and the Arabs assert, that they are so extremely sensible of injustice and ill-treatment, that when this is carried too far, the inflicter will not find it easy to escape their vengeance, and that they will retain the remembrance of an injury till an opportunity offers for gratifying their revenge. Eager, however, to express their resentment, they no longer retain any rancour, when once they are satisfied; and it is even sufficient for them to believe they have satisfied their vengeance. When an Arab, therefore, has excited the rage of a camel, he throws down his garments in some place near which the animal is to pass, and disposes them in such a manner that they appear to cover a man sleeping under them. The animal recognizes the cloaths, seizes them in his teeth, shakes them with violence, and tramples on them in a rage. When his anger is appeased, he leaves them, and then the owner of the garments may make his appearance without any fear, load, and guide him as he pleases. "I have sometimes seen them," says M. Sonini, "weary of the impatience of their riders, stop short, turn round their long necks to bite them, and utter cries of rage. In these circumstances, the man must be careful not to alight, as he would infallibly be torn to pieces: he must also refrain from striking his beast, as that would but increase his fury. Nothing can be done, but to have patience, and appease the animal by patting him with the hand, (which frequently requires some time) when he will resume his way and his pace of himself." Like the elephant, camels have their periodical fits of rage, and during these they sometimes have been known to take up a man in their teeth, throw him on the ground, and trample him under their feet.

They are liable to be injured by travelling on stones, and he cannot well support himself on moist and slippery clays; but his broad hoofs are perfectly calculated for travelling on dry land and perched sands of Arabia. But the peculiar and distinguished characteristic of the camel is its faculty of abstaining from water longer than any other animal, a property so necessary in those immense deserts. For this, Nature has wonderfully provided, by a singular internal conformation; for, besides the four stomachs, which he has in common with other ruminating animals, he is also furnished with a fifth bag, that serves as a reservoir for water, where it remains uncorrupted, and without mixing with the other aliments. When the camel is pressed with thirst, or has need of water to moisten his aliment, in chewing the cud, he draws up into the stomach, or even into the throat, a part of this reserve. Furnished with so capacious and so convenient a receptacle, he can take a prodigious quantity of water at once, and remain many days without drinking.

When travellers find themselves greatly in want of water, it is not unusual for them to kill a camel to obtain what its stomach contains, which is always sweet and wholesome.

Among all the forms of animal life, which Nature in her immense variety exhibits, there is none that more conspicuously displays the justness of design, and perfect adaptation to the circumstances of its existence, and to the service of man, than the rein-deer and the camel; without the former, life could not be supported among the snowy mountains and frozen bogs of Lapland, and without the latter, the sandy deserts of Arabia would be impassible. Few attempts have been made, to transplant the rein-deer into more temperate regions; but of these few none have yet succeeded: frequent trials have been made, to introduce the camel into other countries, but without effect. Though a native of a warm climate, the camel is not found in the tropical regions: it cannot subsist and propogate, either in the suffocating heat of the torrid, or the milder air of the temperate zone. The rein-deer is confined to the hyperborean climates, and seems incapable of subsisting under a more genial sky. Both the one and the other appear evidently designed by Providence for the service and solace of man, in those countries where no other animals are qualified to supersede their utility.

THE CAMEL, OR DROMEDARY, *(Plate II.)*

With only one hunch on its back, is common in Arabia and all the northern parts of Africa, from the Mediterranean Sea to the river Niger, and is infinitely more numerous, and more generally diffused than the Camel; It is also much swifter, and is therefore generally employed on business which requires dispatch.

In Arabia, they are trained for running matches; and in many places, for carrying couriers, who can go above a hundred miles a day on them, and that for nine or ten days together, over burning deserts uninhabitable by any living creature. They require neither whip nor spur to quicken their pace; but go freely, if gently treated; and are much enlivened by singing or the sound of the pipe, which gives them fresh spirits to pursue their journey.

They are mild and gentle creatures at all times, except when they are in heat; At that period, they are seized with a sort of madness; they eat little, and will sometimes attempt to bite their masters; so that it is not safe to approach them.

The Camel arrives at its full strength at the age of six years, and lives forty or fifty.—The females are not usually put to labour; but are allowed to pasture and breed at full liberty. Their time of gestation is near twelve months; and they generally bring forth one at a birth.

THE LLAMA,

This animal inhabits South America, and is the camel of Peru and Chili. Before the arrival of the Spaniards, the Llama and the Pacos were the only animals that assisted the industry of the Indians, the horse, the ox, and the ass being quite unknown. The Llama is very mild and tractable, very swift and sure footed, and, like the camel, has the power of abstaining from drink for a long time. Its neck is long and arched, and its form, excepting that it wants the hunch on the back and seldom exceeds four feet in height, is in every respect like the camel's.

THE PACOS,

Is shaped like the Llama but of such inferior size and vigour that the latter will carry one hundred and fifty pounds, when the former is overloaded with more than fifty. Both of these animals are covered with very find wool, and their flesh is excellent food.

THE WILD BOAR. *(Plate 12.)*

Animals of the Hog kind seem to possess a middle nature, between those that live upon grass and such as are carnivorous; and unite in themselves most of those distinctions, which are peculiar to each class: Like the one, they are rapacious and fond of blood, and do not ruminate; like the other, they are cloven-hoofed, live chiefly upon vegetables, and seldom seek after animal food, except when urged by necessity.

The Wild Boar which is the original of all the varieties to be found in this creature, is much smaller than those of the domestic kind; and does, not like them, vary in colour, but is invariably of a brinded or dark-grey, inclining to black. His snout is longer than that of the tame Hog; and his ears are short, round, and black. He is armed with formidable tusks in each jaw, which serve him for the double purpose of annoying his enemy, or procuring bis food, which is chiefly roots and vegetables: Some of their tusks are almost a foot long: Those in the upper jaw bend upwards in a circular form, and are exceedingly sharp at the points; those of the under jaw are always most to be dreaded; for with them the animal defends himself, and frequently gives mortal wounds.

Wild Boars are not gregarious; but while young, live together in families, and frequently unite their forces against the wolves, or other beasts of prey. When likely to be attacked, they call to each other with a very loud and fierce note: The strongest face the danger, and form themselves into a ring, the weakest falling into the centre. In this position few beasts dare venture to engage them; but leave them to pursue a less dangerous chase.—When the Wild Boar is arrived at a state of maturity, he walks the forest alone and fearless. At that time he dreads no single foe; nor will he turn out of his way even for man himself. He offends no animal; at the same time he is furnished with arms which render him a terror to the fiercest.

The hunting of the Wild Boar is a dangerous but common amusement of the great in those countries where it is to be found. The Dogs chiefly used for this sport are of a slow and heavy kind. When the Boar is roused, he goes slowly

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Plate 12

Wild Boar.

Sow

forward, not much afraid, nor very far before his pursuers. He frequently turns round, stops till the hounds come up, and offers to attack them: After keeping each other at bay for a while, the Boar again goes slowly forward, and the Dogs renew the pursuit. In this manner the chase is continued till the Boar is quite tired, and refuses to go any farther: The Dogs then attempt to close in upon him from behind; and in this attack the young ones, being generally the most forward, frequently lose their lives: The old seasoned Dogs keep the animal at bay until the hunters come up, who kill him with their spears.

In Europe the wild boar is much less common than formerly; and in a century or two, will probably be extinct: but there exists in the hottest parts of Africa a fierce and formidable race of these animals called the wood swine or African wild boar, which lives in a wild state, in the hottest parts of Africa. It is a very vicious animal, and quick in all its motions. It is as dangerous to attack one of them, as a Lion: for, though much smaller, it rushes upon a man, as swift as an arrow; and throwing him down before he has time to strike with his javelin, breaks his legs, and at the same instant rips up his belly.

He will attack a man on horseback, if he should venture to come too near him; and first breaking the Horse's legs, kills both him and his rider.

Sparrman describes it as being of a bright yellow colour, like the domestic kind. Its nose is broad, flat, and of a horny hardness; its head is very large in proportion to the size of its body; underneath each eye it has a great lobe or wattle, lying almost horizontally, broad, flat, rounded at the end, and placed so as to intercept the view of any thing immediately beneath the animal; the ears are large and sharp-pointed, lined on the inside with long whitish hairs; its tail is slender and flat, when the animal is pursued, it always holds it quite erect.

They live in holes under ground, the avenues to which are exceedingly narrow. The natives seldom dare attack them in their retreats, as their is always danger of their rushing out unawares. When pursued with their young ones, it is no uncommon thing to see [illegible] take them up in their mouths, and run with them in that manner at a great rate.

From the shortness of their necks, they frequently fall on their knees to feed; and change this posture to that of standing with the greatest ease,

THE DOMESTIC SOW. (*Plate* 12.)

In no instance has Nature more conspicuously displayed her economy, than in forming this race of animals, and endowing them with an appetite to feed on a variety of things that would otherwise be wasted. The refuse of the kitchen, the barn, the garden, or the field, affords the swine a luxurious repast. It is restless in stormy weather, and seems particularly terrified or affected, when the wind is extremely violent. At such times it will often run screaming about, and appear much agitated.

In observing the disgusting appearance of this animal, its voracious appetite, and its dirty manner of feeding and living, it would scarcely be supposed that its flesh could have so excellent a flavour; and if a man were wholly unacquainted with the nature of all quadrupeds, the hog would certainly be one of the last that he would select for his table.

Under this unpromising exterior, however, nature has concealed one of the most valuable articles of our food. The flesh of this animal is of general use, and of great importance to this country as a commercial nation. Linnæus says, that it is a wholesome food for those who use much exercise, but pernicious to such as lead a sedentary life.

The domestic sow brings forth twice-a-year ten or twenty at each time, the period of gestation being something more than four months. She is an unnatural mother, and if not carefully watched, will frequently devour her own offspring. After a few days, however, she seems to imbibe a tolerable degree of maternal tenderness. The boar is equally, or still more, the enemy of the young, and if not prevented, would immediately destroy the whole litter.

As the hog is one of the most prolific animals of the creation, it is also one of those which are the most extensively diffused. It is found in every latitude except within the frigid zone, and thrives in every temperate climate; and it appears somewhat singular that it is disseminated in most of the sequestered islands of the Pacific ocean, although it did not exist in America until transplanted thither by the Spaniards. In many parts of that continent, the hogs have now so exceedingly multiplied, that they run wild in the woods; but how or when they were first introduced into the islands of the South sea, is a problem that will scarcely ever be solved.

The learned pigs which have frequently been exhibited in England, might suffice to prove that these animals are not destitute of sagacity; but the following instance, related by the Rev. Mr. Daniel, is too singular to be passed over in silence:—a game-keeper of Sir Henry Mildmay broke a black sow to find game, and actually rendered her as staunch as any pointer. After Sir Henry's death this animal was sold by auction for a very considerable sum.

In the island of Minorca hogs are frequently yoked with asses or young horses, in plowing the land; and in some parts of Italy they are used in hunting for truffles which grow some inches under the surface of the ground, but which are soon discovered by the acute scent of these creatures.

THE PECCARY OR MEXICAN HOG.

Is an animal very much resembling the hog; but as they will not breed together, it appears to be a distinct species.

These animals live chiefly in mountainous places, and feed on fruits and roots: they also eat serpents, lizards and toads, and are very dexterous in first taking off the skins with their fore feet and their teeth.

The whole body of this animal is covered with strong bristles, which when he is irritated, rise erect like the bristles, of a hedge hog.

These animals are exceedingly fierce. M. de la Borde relates that being once engaged in hunting a drove of peccaries, he and his party were surrounded by them and obliged to take refuge upon a fragment of rock; and although they kept up a constant fire among them, the ferocious creatures did not retire until many of them were killed.

THE BARBGROUSSA.

Although commonly classed with the hog kind, differs in many particulars from that quadruped, especially in the length of its legs, the slenderness of its body, and the texture of its hair, which is soft and fine resembling wool, and of a dark grey colour mixed with red.

The most striking characteristic of the hog observable in this animal is its tusks which resemble those of the wild boar, and are of the most beautiful kind of ivory.

The Barbgroussa is a gregarious animal: it is easily tamed; its flesh is well tasted, and its body emits an exquisite scent. It exists in different parts of Asia and Africa, and is very common in several of the Oriental islands, especially in that of Borneo. This animal is by some travellers said to repose in a very singular manner, by fixing one of its upper tusks on the branch of a tree, and suffering its body to hang down. In this posture, suspended by a single tooth, it will remain a whole night secure from every danger.

THE RHINOCEROS. (*Plate* 13.)

Next to the elephant the rhinoceros is the most unweildy, hardy, and powerful of all animals: in the bulk of its body there is little difference; but its legs are considerably shorter than those of the former.

This animal is, commonly, in height, from six to seven feet; twelve feet long, from the the tip of the muzzle to the insertion of the tail, and the circumference of the body nearly equal to its length.

The body and limbs of the rhinoceros are covered with a skin, nearly black, thicker and more impenetrable than that of the elephant, forming itself into large folds at the neck, shoulders, and crupper; two of these folds encircle the neck, and one still larger depends from the shoulders to the fore-legs.

The skin is on every part covered with tuberosities, without uniformity or regularity, whence some authors have asserted, that its legs and thighs are covered with scales. This skin forms a kind of armour, capable of resisting a musket ball, or turning the edge of the keenest weapon.

Its eyes are small and half closed, but the head is proportionably longer than that of the elephant. The upper lip which is capable of extension to collect its food, is moveable, and projects considerably beyond the under. This muscular and flexible lip is a kind of hand, or imperfect trunk, somewhat resembling, but destitute of many of the extraordinary qualities of that of the elephant. The under jaw is square before, and in the interior part of the mouth, which is enveloped by the lips, there are no other incisive teeth: but, exclusive of the four cutting-teeth in the four corners of the mouth, they have twenty-four grinders, six in each jaw.

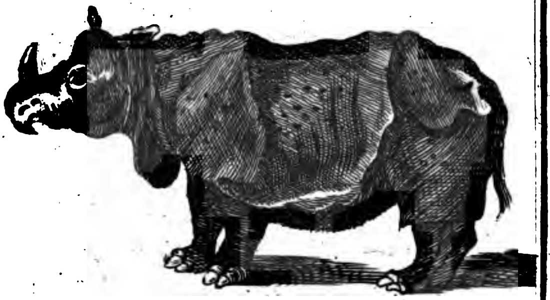
The ears, which are like those of the hog, but smaller, are always erect; these are partly covered with hard coarse bristles, as is likewise the extremity of the tail.

The hoofs of the the rhinoceros point forward, and are divided into three parts. Its legs are round, massy, short and strong; and the belly large, hanging almost down to the ground.

The horn with which its nose is armed, is sometimes near four feet in length, six or seven inches in diameter, at the

Plate 13

Rhinoceros



Unicorn

base, of a grey colour, and of a very hard and solid substance. This weapon is more advantageously situated than the horns of ruminating animals, which are calculated to defend only the superior parts of the face and neck.

In the attack of this animal, the lion and the tiger are frequently foiled in a moment, especially if they attempt him in front, having their bowels ripped up at a single stroke.

The cry of the rhinoceros is very remarkable, being a mixture between the roaring of the calf, and the grunting of the boar.

It is said that the rhinoceros and elephant are mortal enemies, and seldom meet without coming to an engagement, which, between two such bold and powerful animals, must be, beyond description dreadful.

Travellers report, that elephants are frequently found dead in the vast forests of Asia, with their bellies apparently ripped up by the horn of the rhinoceros; with which weapon he successively attacks his formidable antagonist, whose long legs give him an opportunity of striking him in the most vulnerable parts; but, should he fail in the first attempt, the elephant, seizing him with his trunk, throws him to the ground, and, by that means, frequently dispatches him.

The rhinoceros is a solitary animal, found in most parts of the continent of Asia, in the south of Africa, and in the islands of Ceylon, Java, and Sumatra.

Even the ivory of the elephant is not held so much in esteem among the Indians as the horn of this animal, not on account of its real utility, though toys, and a variety of other articles, are made of it; but in consideration of certain medicinal virtues which they superstitously ascribe to it.

The double-horned rhinoceros is extremely rare, and its existence was long considered as fabulous, or at least, doubtful, until it was discovered at the Cape of Good Hope, by Dr. Sparrman, who has published a most exact anatomical account of this before-undescribed animal, which, however, does not appear materially to differ from that of which I have just given a description, except in the circumstance of having two horns, and in the appearance of its skin, which, instead of being covered with armour like folds, has merely a slight wrinkle across the shoulders, and on the hinder parts.

Mr. Bruce's account of the manners of the two-horned rhinoceros is particularly worthy of attention. He observes, that, "besides the trees capable of most resistance, there are in the vast forests within the rains, trees of a softer consistence, and of a very succulent quality, which seem to be destined for the principal food of this animal. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out, so as to increase his power of laying hold with it, in the same manner as the elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches, which have most leaves, and these he devours first. Having stripped the tree of its branches, he does not immediately abandon it; but, placing his snout as low in the trunk as he finds his horns will enter, he rips up the body of the tree, and reduces it to thin pieces, like so many laths; and when he has thus prepared it, he embraces as much of it as he can in his monstrous jaws, and twists it round with as much ease as an ox would do a root of celery, or any small plant.

"When pursued and in fear, he possesses an astonishing degree of swiftness, considering the unweildiness of his body, his great weight before, and the shortness of his legs. It is not true, that in a plain, he beats the horse in swiftness; for though a horse can very seldom come up, that is merely owing to his cunning. He makes constantly from wood to wood, and forces himself into the thickest parts of them; the trees that are dead or dry, are broken down as with a cannon shot, and fall behind him and on his side, in all directions; others that are more pliable, or fuller of sap, are bent back by his weight and the velocity of his motions; and after he has passed, restoring themselves, like a green branch, to their natural position, they often sweep the incautious pursuer and his horse from the ground, and dash them in pieces against the surrounding trees."

THE TAPIR.

This is an American animal, and the largest of that continent, though it does not exceed a heifer of an year old. Being an amphibious animal, he has been supposed a species of Hippopotamus; but though he fills the place of the larger animals, in a region where nature has new-modelled, in miniature, those enormous forms that astonish in the elephant, the Hippopotamus, and the Rhinoceros, the Tapir is a different animal from any of them. Though his snout extends considerably beyond his lower jaw, like that of the Rhinoceros, yet, being destitute of horns, he is sufficiently seperated. This proboscis-like nose, which is very unlike the long trunk of the Elephant, does not at all affiliate him to that animal, while by it he is sufficiently distinguished from the blunt-nosed Hippopotamus, though his habits and manners have a striking resemblance. He lives in the marshy grounds contiguous to rivers and lakes. He is a mild animal, and so timid that on every alarm he plunges into the water, where he is capable of remaining for a long time. He feeds in the night, and lives upon plants and roots. He runs with considerable speed, but he swims faster than he runs. The Tapir inhabits the whole of South America. His skin is of a close and strong texture : his flesh is said to be insipid, and coarse.

THE UNICORN. (*Plate* 13.)

Is described as having a body resembling that of a horse, a tail like an ox, a horn about a foot and a half growing out of its forehead, which is as hard as iron, and as rough as any file, twisted or curled like a flaming sword, very straight and sharp, and of a jet black except the point. Its hair is of a yellowish colour.

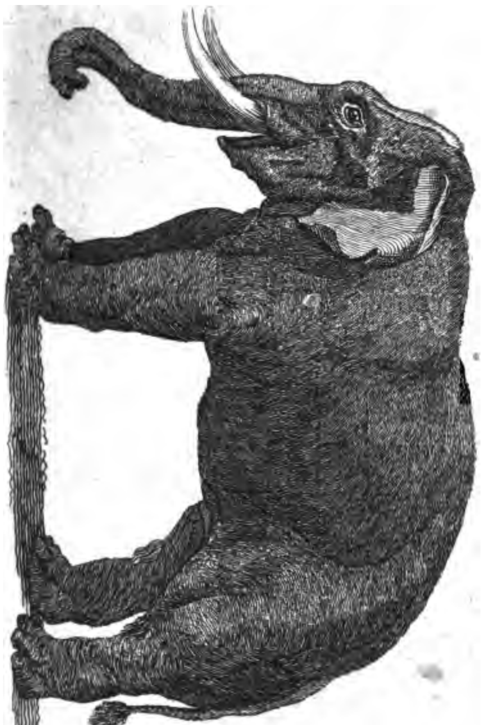
Though the existence of the Unicorn is doubted by many modern writers, yet it is very possible that such an animal might once have existed ; but like the European Elk, has long since disappeared from the face of nature. Those monstrous bones of the Mahmout, as the Siberians call an animal, that must have been at least four times as big as the elephant, which are dug up in that country, may also convince us that there were once animals existing which have been totally exterpated. The histories of Aristotle and Pliny, serve to confirm us in this opinion, for in them we find many descriptions which have not their archetypes in the present state of nature.

THE ELEPHANT (*Plate* 14.)

Is not only the largest, but the most intelligent of quadrupeds, Capable of affection, he forms an entire attachment to the person who feeds and takes care of him. He understands his signs, and the sound of his voice ; and, whether they express passion, command, or satisfaction, is solicitous to anticipate his desires. He looks towards him with a mild and inquistive eye. He attentively listens to his orders, and executes them with assiduity and precision. With such dispositions, the Elephant is amazingly supplied with requisites to execute his intentions. His trunk, which is formed of a multitude of cartilagenous rings, is moveable in all directions. It terminates in a cup-like cavity, at the bottom of which is situated the apertures for respiration and smelling; and, on the superior edge of the cavity, is fixed a hook which performs all the operations of a finger, and finishes this wonderful instrument, at once the strongest and most flexible arm. With the sense of smelling as it were in his hand he culls, with delicacy of choice, the most odoriferous flowers, and picks from the ground the smallest herb or seed. He robs the orange, the cocoa, the banana, and sago trees of their leaves and fruit; and, when the wood is tender, he devours the branches, the trunk, and the roots, taking the assistance of his tusks, where his trunk is ineffectual, to splinter the stem, or to tear up the roots. His mouth, from the stiffness and shortness of his neck, cannot reach the ground but is supplied by the trunk with whatever he eats or drinks. When inclined to drink, he thrusts his trunk into the water, and draws in his breath till it be full; here he can retain it, without impeding respiration, till he discharges the contents by turning up the end of his trunk into his mouth, or by thrown it away, which he can do to a great distance. The general figure of the Elephant is clumsy in a great degree; his neck and limbs being almost immoveable, he turns with such difficulty that hunters can escape from him by turning round him. His pace, however, though grave, is by no means slow; and his strength is enormous. He works machines, and carries burdens, that six horses cannot move. A push of his body will overset a wall; and he can carry on his back an armed tower filled with armed warriors. His courage and prudence are equal to his strength: and his presence, before the use of gunpowder, was sufficient to decide the fate of armies. Elephants do not propagate in a domestic state; all tame Elephants, therefore, have been originally wild. In Africa, they are commonly taken in pits, and killed; but in the east, where they are taken to be domesticated, the wild elephant is decoyed by a tamed female into inclosures, erected on purpose, where he is entangled with ropes: and being introduced to two or three tamed Elephants, that he may have an example for obedience, what by caresses, and what by torture, he is in a few days subdued and reconciled to his condition.

Thus tamed, no animal is so tractable and intelligent. His knowledge and judgement is such, that on many occasions

Plate 14



Elephant

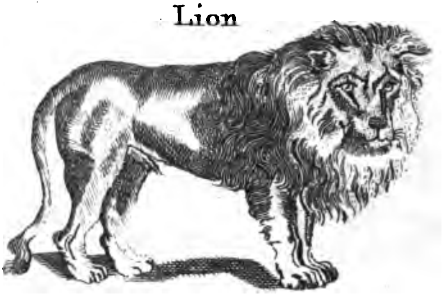
he appears to reason. When about to be ridden, he accommodates his behaviour to the person he serves. He bends down to his master, and with his trunk assists him to mount on his back. If destined to the immediate service of a prince, he seems to recognize his good fortune, and maintains a gravity of demeanour corresponding to the dignity of his office. If, on the contrary, less honourable labours are assigned him, he turns melancholy, frets, and appears humbled and depressed. Many anecdotes might be collected, to illustrate the fidelity, gratitude, and sagacity of this extraordinary animal; a few shall suffice. In India, they were formerly employed in launching ships: One was required to force a large vessel into the water, which turned out to be above his strength; his master, calling to the keeper with a sarcastic tone bade him take away this lazy beast, and bring another; the poor animal was so stung with the reproof, that he repeated his efforts, fractured his skull, and died on the spot. The Elephant, both in his wild and tame state is sometimes seized with periodical fits of madness, when he becomes so formidable that it is often expedient to kill him; yet, amidst the rage by which he is actuated on this occasion, he sometimes recollects himself. At Adsmeir, an Elephant, which was seized with madness, broke his fetters, and, running through the market-place, put the crowd to flight: Among those who fled, an herb-woman, who was in the practice of giving him a mouthful of greens whenever he used to pass that way, in her hurry to get along, had left her child behind her; the animal, recollecting the stall of his benefactress, took up the child gently with his trunk, and laid it in a place of safety. Another had killed his cornac, or governor; the wife, who witnessed the catastrophe, seized his two children, and, flinging them towards the Elephant, exclaimed, "You have destroyed their father, you may now put an end to their life and mine!" He instantly stopped, and looked mournful; and taking the elder child on his trunk, he placed him on his neck, adopted him for his cornac, and never allowed another to mount him. At Delhi, an Elephant, passing by a taylor's shop, put in his trunk, when one of the men, with his needle, pricked the end of it. The animal passed on to the nearest puddle; and, returning with his trunk full of water, squirted its contents amidst those who had offended him, and spoiled their work. An Elephant at Versailles did nearly the same thing to a painter, who wished to draw him in the action of elevating his trunk: His boy was employed to throw fruit into his mouth to keep him in the attitude; but, as he often deceived him with an appearance only of throwing, he grew resentful; and, instead of punishing the lad, he turned his eye to the master, seemingly sensible of his intention, drew up a quantity of water into his trunk, discharged it on the painter's drawing, and completely spoiled it. A soldier of Pondicherry, who commonly carried to an elephant a certain measure of arrack every time he received his pay, having one day taken a glass too much, and being pursued by the guard, who threatened to conduct him to prison, took refuge under the elephant, where he soon fell asleep. It was in vain, that the guard attempted to draw him from his asylum; the elephant defended him with his trunk. Next day the soldier having become sober, was struck with terror to have lain under an animal of such enormous bulk; the elephant perceiving his consternation, caressed him with his trunk, and treated him with the greatest tenderness. The Elephant employed in loading a boat, so carefully disposes of all the articles, that they are neither crushed nor wet, and the arrangement never needs to be altered. In raising wheeled carriages heavily loaded up a declivity, he pushes the carriage forward with his front, supports it with his knee, and renews his efforts, And if he drags a beam of wood along the ground, he removes all obstacles to make it run easy.

I have observed several times (says Edward Terry,) that the elephant does many things which are rather an indication of reason, than of simple instinct. He does whatever his master commands him: if he orders him to frighten any person, he advances towards him with the same fury as if he would tear him to pieces; and when he comes near him, he stops short, without doing him any harm. If his master wishes to affront any person he no sooner signifies it to the elephant than he takes dirty water in his trunk and throws it in his face. The Mogul has elephants for the execution of criminals condemned to death. If their leader bids them dispatch these wretches immediately, they tear them to pieces in a moment, with their feet; but if he commands them to make them languish, they break their bones one after another, and cause them to suffer torments equal to those of the wheel.

The largest Elephants of India are fourteen feet high: Those of Senegal, and the west coast of Africa, exceed not ten or eleven feet. As they swim with ease, they are of great

Plate 15

Lion



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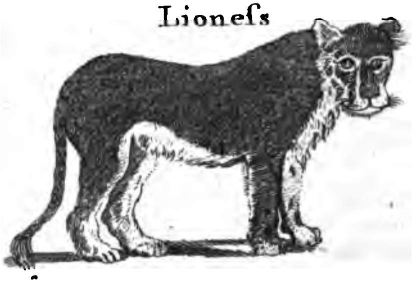
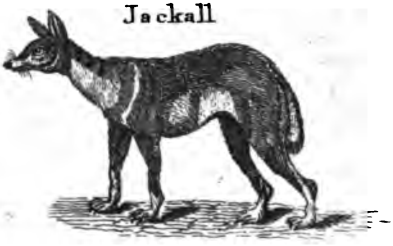


Jackall



use in crossing rivers which they do with vast burdens of baggage and men. Their tusks, so well known as ivory, grow so large and heavy, that, when the animal sleeps, he is obliged to have them supported. Tusks have been frequently found nine feet long, and one hundred and twenty pounds in weight.

The common colour of the elephant is ash-grey, or blackish. White ones are extremely scarce; some have been seen at different times in the Indies, where there are also some of a reddish colour.

The elephant's tail is hardly as long as either of his ears; each of which is nearly three feet long; and it is rather thin, sharp, and garnished at the extremity with a tuft of large black, shining, and solid bristles, which are so strong that a man cannot break them though they are elastic and pliant. This tuft of hair is an ornament which the Negro women are particularly fond of; and to which they attribute some particular virtue; hence an elephant's tail is sometimes sold for two or three slaves; and the Negroes often risk their lives to snatch it from the living animal.

THE LION. (*Plate* 15.)

We have been accustomed, even from infancy, to attach a kind of veneration to the character of the Lion. Fabulists poets, and historians, have united in celebrating the magnanimous conduct and qualities of this monarch of the desert.

This noble animal, the emblem of regality in general, and of the British power in particular, is of the feline kind, and is a native of the torrid zone; he degenerates in size and courage, in proportion to his removal from the hotter climates; that immediately under the equator, being most remarkable for strength and ferocity. Formerly the species was more numerous than at present; this decrease is owing probably to the introduction of fire arms.

The mauritanian Lion, which has been so much celebrated, is of a diminutive size, and a gentleman in the suite of Captain Malcolm, lately deputed by the East India company to the court of Persia, says, that, in the most populous provinces, the race seems to be nearly extinct, and the few that remain, are exceedingly degenerated. It is in the arid and burning deserts of Africa where this monster is truly formidable.

The shape of the Lion is lean, bony, and muscular, his head and neck, which are covered with a flowing and majestic mane, apparently forming "a tower of strength" against the most formidable enemy; his eyes are sunken, red, and fiery, but incapable of bearing a strong light, for which reason, he generally makes his predatory excursions beneath the gloom of night. It has been asserted that the hind parts of this animal are weak and feeble, and that a slight blow, on those parts, will often prove fatal to him; this opinion seems to have gained ground, from the ideas which are generally formed of him, from subjects of heraldry, in which it is customary to represent him, from the shoulders backwards, exceedingly slender, and disproportionate; but his whole frame is a perfect model of agility, strength and just proportion. His teeth and claws, his weapons of defence, are sharp, strong and formidable: the latter, like all those of the cat kind, being lodged in a sheath, are capable of extension, or retraction, at pleasure. The general colour of the Lion is a tawny, or dingy yellow, in different regions, however, it varies in a slight degree, but the assertion that there are Lions in Africa, or India, white, red, and variegated, appears to be totally unfounded. When roused, the Lion erects his dreadful mane, all the vast muscles of his face swell to an astonishing size, and his tail, which is long and tipped with a heavy tuft of hair, moves with such force and rapidity, that a single stroke of it would throw the most athletic man to the ground. His ears are short and round, but his olfactory nerves are said to be less perfect than that of most other animals, a circumstance often very favourable to travellers, and of which we have a striking instance in modern narrative.

Mr. Park, in his travels into the interior of Africa, relates, that on passing through the desert, he one day observed a huge Lion stretched on the sand, reposing his bearded chin on his broad extended paws, and with his eyes hardly closed, dozing in the burning sun; at which perilous crisis, he had, however, the presence of mind to turn aside and steal softly behind the bushes in his rear, by which means he providentially effected his retreat; which, in all human probability could hardly have been the case had this tremendous monster been possessed of that acute sense of smelling, not only peculiar to the dog, but many other quadrupeds.

In the manner of the cat and the tiger, the Lion, when not pressed by urgent hunger, lies in ambush, and patiently waits for his prey; when it approaches his lurking place, within about twenty feet, he darts upon it, with one prodigious spring, and with his ponderous palmated paws, frequently strikes it dead at a blow; but should he over leap or otherwise miss his object, he retires, sullen and disconcerted and resumes his former station, waiting a more favourable opportunity. He sustains hunger very well for several days, taking as much food at once as suffices for three days; but he is less patient of thirst, his warm temperament requiring frequent dilution.

The voice of the Lion is materially different at times, and distinctly various on different occasions. His ordinary voice is a hideous roar, echoing through his native caverns and solitudes like distant thunder: this roar is indicative of rain it is likewise expressive of anguish or hunger. When he is irritated or enraged, he puts forth a kind of short, broken and reiterated growl concluding with an inexpressibly dreadful sound, enough to appal the stoutest heart.

In his wild state, the Lion prefers the flesh of animals just killed, and very rarely feeds on any carcase which even tends to putrefaction: his urine is almost intolerably offensive, and his breath exceedingly hot and fœtid. Few creatures are capable of coping with him, except the large tiger, the elephant, and the rhinoceros: horses in their natural state cautiously avoid him, but instances have occured in which they have dexterously defended themselves with their heels, and left their ferocious antagonist for dead on the spot; but should they miss their stroke, the Lion fixes on their backs, and inevitably tears them in pieces. He is sometimes hunted down by dogs, fifteen or sixteen of which are generally required to master him. The natives of the Cape of Good Hope, sometimes betray him into pit-falls, dug for that purpose, and have sometimes, the boldness to attack him with clubs and spears, and generally come off victorious, indeed, it is only from being unacquainted with the powers and abilities of man, that the Lion retains his fierceness and intrepidity.

Since the Lion, has been bred, and domesticated, in this country, most of the opinions of Aristotle, and others among the ancients, have been utterly confuted; the particular circumstances of its gestation, fecundity, and growth, having been perfectly ascertained, at least with a due allowance for the difference of climate, and the habits of confinement. He arrives at maturity at five years old, and has been known to live to upwards of seventy: in his natural state, it is most probable, that he attains a much greater age.

Androcles, the slave of the Roman proconsul of Africa, fearing his master's vengeance for some fault, which he had committed, fled into the Numidian desert, and sought refuge in the den of a Lion, from whose foot he extracted a thorn which had distressed him, and was repaid with a daily allowance of flesh, which the grateful animal regularly brought and laid before him: at length, tired of his situation, Androcles returned to his master, and was sentenced to be sent to Rome, to be devoured by Lions; one of which chanced to be that which had preserved him in the desert, who, on approaching him, dropped his tail, and began to lick his hand. The spectators were astonished; the slave received free pardon; the Lion was presented to him, and was his constant public attendant for many years afterwards.

While young and active, says Buffon, the *Lion* subsists on what he can obtain by the chase, and seldom quits his native deserts and forests; but when he becomes old, heavy, and less qualified for exercise, he approaches the habitations of men, to whom, and to domestic animals, he then becomes a more dangerous enemy. It is, however, observed, that when he sees men and animals together, he seldom or ever vents his fury on the former, unless he should receive a blow; in which case he deserts his prey, and immediately rushes forward to attack the person who gave it.

For hunting this powerful creature it is necessary the horses as well as dogs should be properly trained and disciplined, since almost all animals are intimidated, and fly at the approach of the *Lion*, and even his smell is often sufficient to oblige them to desert.

His skin being exceedingly firm and compact, and the hair very thick on the fore parts in particular, it is not easily penetrated, yet it is not proof against a javelin or musket-ball. The hunters generally aim to touch a vital part, in failure of which they are exposed to the most iminent danger.

Like the wolf, and other inferior beasts of prey, the Lion is often taken by stratagem; a deep pit-fall is sometimes dug in the earth, over which some living animal is fixed as a bait; at others, he is ensnared into a kind of net-work, and when once he finds himself entrapped, in the first moments of surprise, he appears so intimidated and confounded, that he is easily muzzled, and conducted, in shackles, to a place of security.

THE LIONESS. (*Plate* 15.)

The only authenticated distinction in the Lion-race, being that which appears between the sexes, we have conceived a propriety in dedicating a seperate representation and description to the Lioness, whose character is perhaps more different from the male than that of any other species of animals. She is much smaller, and more slender than the lion, and her neck is destitute of the long and flowing mane with which he is furnished; her hair is generally more sleek, and she is not possessed of the long beard, and huge tufted tail, which distinguish the male.

The Lioness, robbed of her whelps becomes proverbially terrific; and, in that case, has been known to pursue the depredators over the most fearful precipices, and at a great distance out to sea; it is then that her fury beggars all description, and every inferior animal in her progress becomes the victim of her ferocity and desperation.

The Lioness goes five months with young; and during the prime of life, produces a litter of four or five every spring, which, it is now well ascertained, are about the size of a large puppy, and are equally harmless, lively, and playful.

In the act of foraging, the Lioness frequently seeks the retreat of the elephant, which litters about the same season, and, in the absence of the dam, carries off her young. She particularly esteems the flesh of the camel, and when she has an opportunity, singles it out from that of all other animals: she drags to her cave the carcases of buffaloes, and other large beasts, warm and reeking in their gore, and lays them before her cubs; after a time she lays their food at a greater distance, and thus by degrees innures them to assist themselves.

THE JACKAL. (*Plate* 15.)

This species of this animal is diffused, with some variety, through almost every part of Asia; and is found in Barbary, and other parts of Africa as far as the Cape of Good Hope. Although it is one of the most numerous of all the wild animals of the East, there is scarcely any less known in Europe, or more confusedly described by natural historians.

These creatures differ in size; those of the warmest climates are said to be the largest: they are of a reddish-brown colour. The smaller Jackal is about the size of a

Fox; and its colour is a bright-yellow.—In general, this animal may be said to partake of a middle nature, between the Wolf and the Dog; and to the savage fierceness of the one, it adds the impudent familiarity of the other.——Its cry is a dismal howl, mixed with barking. It is more noisy in its pursuits than the Dog, and more voracious than the Wolf.

Jackals go in packs of forty or fifty, and hunt like hounds in full cry from evening till morning. They destroy the poultry, and attack the flocks: they roam through the villages and gardens, and carry off every thing they can eat: They enter stables, yards, and out-houses; and devour skins, and every thing that is made of leather; such as harnessing, boots, shoes, &c. Nothing can escape their rapacity: they will ransack the repositories of the dead, and greedily devour the most putrid bodies; for which reason, in those countries where they abound, the inhabitants are obliged to make the graves of a great depth, and secure them with spines to prevent the Jackals from raking up the earth with their feet. They are said to attend caravans, and follow armies, in hopes of being furnished with a banquet by disease or battle.—They may be considered as the vulture among quadrupeds; and, like that destructive bird, devour every thing indiscriminately that has once had animal life.

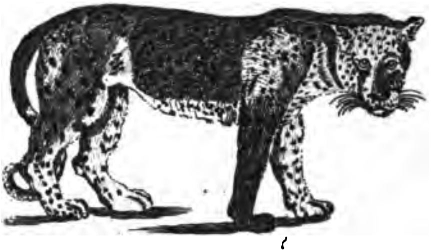
These animals hide themselves in holes and dens by day, and seldom appear abroad till the evening; when they fill the air with the most horrid howlings, and begin the chase. The Lion, the Panther, and other beasts of prey that do not follow by the scent, take advantage of the general consternation, and follow in silence behind till the Jackals have hunted down their prey: They then devour the fruits of their labours, and leave them only the remains of the spoil; from whence the Jackal has been vulgarly called the Lion's Provider, as if those two animals acted in concert, and had formed a plan for their mutual support.

The Jackal frequently pursues the Gazelle; and is so bold, as to follow it even into the midst of a town or village, whither that timid animal frequently flies for protection, and by that means sometimes escapes: for the incessant barking of the Jackal alarms the inhabitants; who sally out, and drive off the pursuer, in hopes of being able to secure the game.

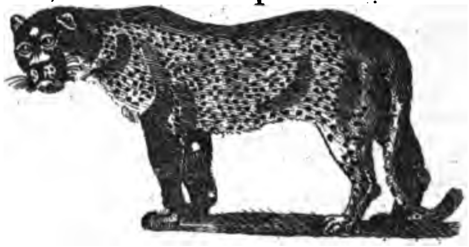
Sparrman's description of those he saw at the Cape differs materially from the accounts we have been able to collect

Plate 16

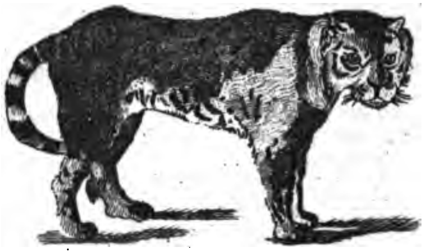
Panther



Leopard



Tiger



from other authors. He says they are about three feet in length, and their tails little more than a foot long: the predominant colour is a reddish-yellow, the legs are of a pale-gold colour; under the belly, and on the inside of the legs, the colour inclines to white; the nose and ears are of a brighter red; the head, neck, and back, are grey; the tail is partly grey, and partly of an umber colour, and black at the tip. He says it resembles the European Fox in form, manners, and disposition and is not known to assemble in packs for the purpose of hunting; neither is its voracity equal to that ascribed to it by other naturalists.—It is probable it may have been confounded with the Wild Dog, which is common at the Cape, and hunts its prey in packs. It is very fierce and mischievous, and destructive to the flocks of Sheep and Goats in those parts. There are two kinds of these Dogs,—the one large, and of a reddish colour; the other less and browner. They are very bold, and wander about night and day in search of their prey. They make a noise somewhat like the cry of our common hounds, and hunt with great sagacity, acting perfectly in concert with each other till the game falls a prey to the pack. They are said to be always extremely lean, and are very ugly.

M. Buffon mentions an animal of the Jackal kind by the name of the Adive; of which he gives a drawing, somewhat resembling a small Fox. It is less than the common Jackal, and is sometimes tamed and kept in a domestic state.

THE TIGER. (*Plate* 16.)

Is a most rapacious and destructive of all carnivorous animals. Fierce without provocation, and cruel without necessity, its thirst for blood is insatiable: though glutted with slaughter, it continues its carriage, nor ever gives up so long as a single object remains in its sight. Flocks and herds fall indiscriminate victims to its fury: It fears neither the sight nor the opposition of man, whom it frequently makes its prey; and it is even said to prefer human flesh to that of any other animal.

The Tiger is peculiar to Asia; and is found as far North as China and Chinese Tartary: It inhabits Mount Ararat, and Hyrcania of old, famous for its wild beasts. The greatest numbers are met with in India, and its islands: They are the scourge of the country: They lurk among the bushes, by the sides of rivers, and almost depopulate many places.—

They seldom pursue their prey; but bound upon it from the place of their ambush, with an elasticity, and from a distance, scarcely credible.—It is highly probable, that, from this circumstance, the Tiger may derive its name, which, in the Armenian language, signifies an arrow; to the flight of which this creature may very properly be compared, in the quickness and agility of its bounds.

The strength of this animal is so great, that, when it has killed an animal, whether it be a Horse, a Buffalo, or a Deer, it carries it off with such ease, that it seems no impediment to its flight. If it be undisturbed, it plunges its head into the body of the animal up to its very eyes, as if to satiate itself with blood.

The Tiger is one of those animals whose ferocity can never be subdued: neither gentleness nor constraint has any effect in softening his temper. It does not seem sensible of the attention of its keeper; and would equally tear the hand that feeds, with that by which it is chastised.

Notwithstanding the cruelty of this creature's disposition, a sudden check has sometimes had a good effect in preventing its meditated attack. Some ladies and gentlemen being on a party of pleasure, under a shade of trees, on the banks of a river in Bengal, were suddenly surprized at seeing a Tiger ready to make its fatal spring: one of the ladies, with amazing presence of mind, laid hold of an umbrella, and unfurling it directly in the animal's face, it instantly retired.—Another party had not the same good fortune. A Tiger darted among them whilst they were at dinner, seized on a gentleman, and carried him off in the sight of his disconsolate companions.

On the 22d of December, 1792, Mr, Monro, an illustrious character, and three other gentlemen, went on shore on Sanger island, in the East-Indies, to shoot deer. They saw several tracks of tigers, notwithstanding they continued their sport for some hours, and then sat down to rest themselves, after taking the usual precaution of making a great fire, and firing their pieces several times in the air, in order to terrify and drive away any savage animals that might be lurking around. They had but just commenced their repast, when one of their attendants informed them that a fine deer had approached within six yards. The gentlemen instantly seized their guns, when a tremendous roar like thunder was heard, and an enormous tiger sprang on the unfortunate Monro, and carried him off through bushes and every other obstacle, without any apparent difficulty; every thing yielding to his prodigious strength.

In this dreadful emergency, the other gentlemen immediately fired at the beast, and, as it appeared, not without effect, for in a few minutes Mr. Monro rejoined them, covered with blood. They lost no time in procuring medical assistance, but the unfortunate gentleman's skull was so fractuated by the teeth of the monster, and his neck so torn by its claws, that he survived but a short time. Thus fell a worthy and gallant officer, who, had he not been cut off by this unfortunate accident, would undoubtedly have rendered the most essential services to his country. This tiger appeared to be not less than four feet and a half high, and nine long; and when he made the fatal spring, his roar was terrible beyond description. Fierce and tremendous as this animal is, the hunting of him is a favourite diversion with some of the eastern princes.

They attack all kinds of animals, even the Lion; and furious combats have frequently been maintained between them in which both have perished.

The tigress produces four or five young at a litter, and when robbed of them, her fury rises to the most ungovernable height: regardless of danger, she pursues the plunderers, who are generally compelled to release one of their captives, in order to retard her progress: she has no sooner, however, taken it to the nearest covert, than she renews the pursuit even to the gates of buildings, or the edge of the sea; and when her exertions prove unavailing, she expresses her maternal agony by the most tremendous howlings.

THE PANTHER. (*Plate* 16.)

Is of a bright tawny colour, elegantly spotted with roundish spots. He is about the size of a large dog, though he sometimes measures nine feet from the point of the nose to the end of the tail. The panther is, in Africa, what the tiger is in Asia, a ferocious and cruel murderer. His manner of taking his prey is the same as the tiger, he lurks in thickets or creeps on his belly, till within reach, when he leaps and takes it by surprise. That he climbs trees in pursuit of the monkey and lesser animals, of which he destroys a great number, is comparatively his pastime; for, when he is pressed with hunger, he attacks the strongest animal, or man, without distinction. He is not, however, so perfectly untractable as the tiger; for though he cannot be said to be tamed, he is so far subdued as to be subservient to the purposes of hunting. He is brought out to the field in a cage, carried on a cart. When the game is sprung, the door of the cage being opened, he leaps with repeated bounds towards the animal, throws him on the ground and strangles him. If he happen to miss his aim, he becomes mad with rage, and sometimes turns with fury on his master. To prevent accidents of this kind, it is common, on these excursions, to carry a piece of flesh, a lamb, or a kid, which is thrown to him and appeases his fury. The Panther was well known in the circus of Rome. Scaurus at one time exhibited 150, Pompy 410, and Augustus 420 panthers.

THE LEOPARD (*Plate* 16.)

This beautiful, but ferocious animal, is an inhabitant of the interior parts of Africa, where the species most abounds; but it is also found in several parts of India, China, and Arabia: and is hunted for its flesh as well as its skin, which is exceedingly beautiful, being of a fine bright yellow, thickly diversified with small black spots, disposed in clusters; highly ornamental. When brought to Europe, the skins of these animals are greatly esteemed.

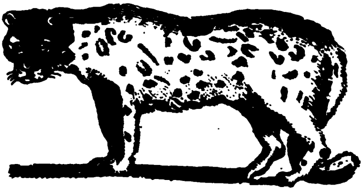
Their flesh is said to be as white as veal, and well tasted; it is much relished by the negroes, who frequently take them in pit-falls, covered at the top, and baited with a morsel of some kind of flesh. The female negroes make collars of their teeth, which they wear as charms, and to which their imagination, clouded by ignorance, and influenced by superstition, its natural concomitant, has induced them to attribute extraordinary virtues.

When these animal, cannot find a sufficient supply of food in their native solitudes in the uncultivated parts of Africa, they frequently come down in great numbers into the lower Guinea, where they make horrible devastations among the herds of cattle which cover the plains of that fertile country, and spare no living creature that has the misfortune to fall in their way.

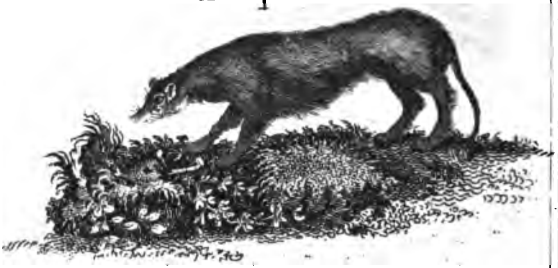
The late Sir Ashton Lever kept a leopard in a cage at Leicester-house, where it became so tame as always to appear gratified by attention and caresses; testifying its pleasure by purring, and rubbing itself against the bars like a cat. Sir Ashton presented it to the royal menagerie in the Tower, where a person previously acquainted with it, went, after an interval of more than twelve months, and was greatly sur-

Plate 17

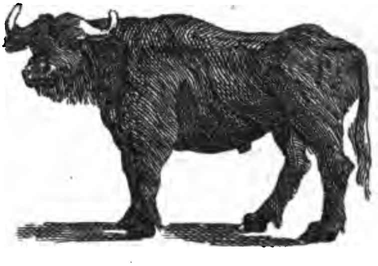
Ounce



Bompo



Buffalo



prised to find himself recognized by the animal, which began to renew its usual caresses.

In India there is a species of leopard about the size of a greyhound, marked with spots pretty much like the rest of the kind, but of which the ground colour is a less brilliant yellow, inclining to tawny. This species of leopard is frequently tamed and trained to hunt the Antelope, and other beasts of the chase. It is carried in a small kind of waggon, chained and hood-winked, until it approaches the game, when it is unchained and let loose on the pursuit. At first it begins by creeping along close to the ground, squatting and concealing itself as much as possible, until it gains an advantageous position. It then darts on its prey with extraordinary agility, frequently making five or six amazing bounds. If it does not succeed in this first effort, it desists from any other pursuit, and returns to its master.

The general size of the African leopard is nearly that of a pretty large mastiff, and few of them exceed four feet in length.

THE OUNCE. (*Plate* 17.)

Is of a whitish ash-colour, spotted with black; is about, three feet and a half long. It inhabits Barbary, Persia, India, and China. It is of a more gentle and mild nature than most of the preceding; it is used for the chace of antelopes and hares, but instead of being carried in a cage, on a cart, like the panther, or chained on a waggon like the leopard, it is carried on the crupper of the horse. It is as much under command as a setting-dog, returns at the least call, and jumps up behind its master. The scent of the Ounce is not so fine as that of the dog. It neither follows animals by their foot, nor is it able to overtake them in a continued chase. It hunts solely by the eye, and makes only a few springs at its prey. It it so nimble, as to clear a ditch or a wall of many feet. It often climbs trees to watch animals that are passing, and suddenly darts upon them.

THE JAGUAR

Is of a bright tawny colour, marked on the back with long black stripes on the sides, with oblong spots open in the middle. It inhabits the hottest parts of South America, and grows to the size of a wolf. It is a very wild and ferocious animal, but cowardly and easily put to flight, either by the shepherd's dogs, or by a lighted torch. In the night time it has a fearful howl. It watches for its prey on the banks of rivers, and seizes it by surprise. Like the tiger, it buries its head in the body of its prey, and sucks the blood before he devours it.

THE COUGUAR

Is of a pale reddish brown; the body from the nose is about five feet, the tail is about two feet long It inhabits America from Canada to Brazil, and has been mistaken for the lion. It is the scourge of the colonies in the hotter parts of America, being fierce and ravenous in the highest degree. It swims over broad rivers and attacks cattle even in the inclosures, and when pressed with hunger, will also attack the human species. In North America, its fury seems to be subdued by the climate, and the smallest cur, in company with his master, makes it seek for security by running up trees; but, as it is very destructive to domestic animals, it is a great nuisance to the planter. It climbs trees and lies in wait of the moose and other deer; when the animal passes underneath, it then drops and soon destroys it. It conceals that part of the carcase which it cannot eat. It purs like a cat, and at other times, makes a great howling. The fur is soft and valued by the Indians as a winter covering; They also eat its flesh.

The Couguar, when brought into captivity, is almost as gentle as the domestic Cat, allows itself to be caressed, and will permit boys to mount on its back.—It is sometimes called the Poltron Tiger.

THE BLACK TIGER.

This animal seems to be only a variety of the former, differing chiefly in the colour, which is dusky, sometimes spotted with black, but generally plain. The throat, belly, and inside of the legs, are of a pale-ash colour; the upper lip white, covered with long whiskers; above each eye, it has very long hair; and at the corner of the mouth, a black spot; its paws are white; and its ears sharp and pointed.

This animal grows to the size of a heifer of a year old, and has great strength in its limbs.—It inhabits Brazil and Guiana, is a cruel and fierce animal, much dreaded by the Indians; but fortunately the species is not numerous.

M. de la Borde, in his description of these animals says, that they frequent the sea-shore, and eat the eggs deposited there by the turtles. They likewise eat caimans or alligators, lizards, and fishes, and sometimes the buds and tender leaves of the Indian fig. They are excellent swimmers. In order to catch the alligator, they lie down on their belly at the edge of the river, strike the water to make a noise, and as soon as the alligator raises its head above the water, dart their claws into its eyes, and drag it on shore.

THE OCELOT

Is of a bright tawny colour marked lengthways, with long stripes, of black, hollow and tawny in the middle, in which are sprinkled small black spots. It is the most beautiful of all spotted animals. The beauty of the leopard is comparatively flat and formal, with the symmetry of the variegated spots or the liveliness of colouring that embellishes the skin of the ocelot. The female is less elegantly spotted, and the colours are fainter. This species is four times the size of a cat, and is fierce, and cruel, but afraid of mankind. As it prefers blood to flesh, it destroys a great number of animals. It preys on foals, calves, and game, and climbs trees in pursuit of the monkey.

THE MARGAY

Is about the size of the common cat, of a bright tawny colour, the face is stripped downward with black, the body is marked with stripes and oblong black spots, the tail is very long and marked with black. It inhabits South America lives much in trees, kills feathered game and poultry, is very active and goes by bounds or leaps. It brings forth two at a time, and at all seasons. It makes a noise like the common cat, and appears only a variety of the wild kind, but its head is more square, its hair shorter, and its muzzle and tail longer. It is quite untameable.

THE ROMPO. *(Plate 17.)*

Is bred in India and Africa, he keeps in the woods. His body is long and slender, being about three feet in length, with a long tail, at the end of which is an hairy sort of brush. He is commonly called by the negroes Man-eater because he feeds upon dead men; to come at which he greedily grubs out the earth off their grave, as if he had notice of some body there hid. He does not immediately fall on as soon as as he has found the body, but goes round it several times, as if afraid to seize it.

THE BUFFALO. (*Plate* 17.)

Is another species of horned animals, which, by its appearance, seems to be of the ox kind, and in its form bears the most sriking general resemblance to the common ox. Its habits and propensities are also similar, with respect to its aptitude for domestic uses, as both are equally submissive to the yoke, yet no two species of animals can be in reality more distinct; and they have the most singular antipathy against each other, which appears the more extraordinary as nothing of the kind is observable between the common cow and the bison, although they resemble each other much less in form.

The buffalo is not so beautiful an animal as our common ox, his figure being more clumsy, his body thicker and shorter, and his legs, in proportion, longer; his head, which he carries nearer the ground, is smaller than that of the ox; his horns are not so round, nor is his body so thickly covered with hair. The flesh of the buffallo is described by some as hard and unpalatable, and exhaling a disagreeable smell. Sparrman, on the contrary, says, that the flesh is coarse, and rather lean, but full of juice, of a high but not unpleasant flavour. In regard to this, much may depend on the caprice of taste as well as on the difference of climate and feeding; for experience proves, that these circumstances have a very powerful influence on all animals, especially those of the horned kind, both with respect to their size and shape, the nature of their flesh, and the quality of their other productions. The innumerable shades of difference, produced in the same species of animals by the influence of soil and climate, and other adventitious circumstances, are every where observable, and admit of an endless variety: it is, therefore, no wonder, that naturalists, as well as travellers, should differ in the description of minute particulars. All, however, agree, that the buffalo brings forth no more than one calf at a time, and that its period of gestation is twelve months, which evidently proves it to be a distinct species from the cow.

The wild buffalo is found in India, and in many parts of Africa, especially towards the Cape of Good Hope. These are a formidable tribe, and it is impossible to escape their fury, otherwise than by climbing into some large tree, as they will break down one of a moderate growth. Many travellers have been instantly gored to death, and trampled to pieces under their feet. They run with amazing speed, and cross the largest rivers without difficulty. Professor Thunberg tells us, that when travelling in Caffraria, he and his companions had just entered a wood, when they discovered a large old male buffalo, lying alone, in a spot that, for the space of a few square yards, was free from bushes. The animal no sooner observed the guide, who went first, than with a horrible roar he rushed upon him. The man, turning his horse round, behind a large tree, the buffalo rushed straight forwards to the next man, and gored his horse so dreadfully in the belly, that it died soon after.—The two men climbed up into trees, and the furious animal made his way towards the rest, of whom the professor was one, who were approaching, but at some distance. A horse, without a rider, was in the front: as soon as the buffalo saw him, he became more outrageous than before, and attacked him with such fury, that he not only drove his horns into the horse's breast, but even out again through the very saddle. This horse was thrown to the ground with such violence, that he died instantly, having many of his bones broken. Just at this moment the Professor happened to come up; but, from the narrowness of the path, having no room to turn round, he was glad to abandon his horse, and take refuge in a tolerably high tree. The buffalo, however, had finished; for after the destruction of the second horse, he turned suddenly round, and galloped away.

Some time after this, the professor and his party perceived an extremely large herd of Buffaloes grazing in a plain. As they were now well acquainted with the disposition of these animals, and knew that they would not attack any person in the open plains, they approached within forty paces and fired amongst them. The whole troop, notwithstanding the individual fierceness and boldness of the animals, surprized by the sudden flash and report, turned about and made off towards the woods. The wounded buffaloes, being unable to keep pace with the rest of the herd, were separated from them. Amongst these was an old buffalo, which ran with fury towards the party. They knew that, from the situation of the eyes of these animals, they could see in scarcely any other direction than straight forward; and that, in an open plain, if a man that was pursued, darted out of the course, and threw himself flat on the ground, they would gallop forward to a considerable distance before they missed him. These circumstances prevented their suffering any material alarm. The animal, from this contrivance, passed close by them, and fell before he appeared to have discovered his error. Such, however, was his strength, that notwithstanding the ball had entered his chest, and penetrated through the greatest part of his body, he ran at full speed several hundred paces before he fell.

The hunters kill the buffaloes by firing on them from the tops of trees, with balls partly composed of tin, as the hide of this animal is too hard to be penetrated by a common musket ball. The hide of the buffalo is very valuable, and the leather made from it is much esteemed for its smoothness, impenetrability, and duration, qualities which render it excellent for harness.

This animal, although so wild and formidable in a state of nature, is very easily tamed: it is patient and persevering, and being endowed with great strength, is very serviceable for the draught. In Italy the buffalo is domesticated, and constitutes a considerable part of the wealth and the food of the lower sort of the peasantry, who use them for the purposes of agriculture, and make butter and cheese from their milk, which is, however, reckoned inferior to that of the cow. Buffaloes are also found in a tame state in many parts of the East, as well as in Italy. It is observed by D'Obsonville, that it is a singular sight to see large herds of them, morning and evening, cross the Tigris and Euphrates. They proceed, all wedged together, the herdsman riding on one of them, sometimes standing upright, and sometimes couching down, and if any of those on the outside straggle, or lag behind, stepping lightly from back to back, to drive them along. The buffalo, although naturally fierce and terrible when wild, is by the management of man rendered an useful animal, and a valuable gift of the bountiful Creator.

THE BEAR. (*Plate* 17.)

No animal is more generally known than the Bear, and yet there is none about which Naturalists are less agreed. These uncertainties have arisen from their not attending properly to the different species. The land-bear must be distinguished from the sea-bear, which is commonly known by the name of the White or Polar bear. Land-bears must also be divided into two classes, the brown and the black. There are some white land-bears found in Tartary, Russia, &c. which, though they resemble the sea-bear in

Plate 18

Bear

Ant Bear

Wolf

The voice of the bear is a kind of growl or harsh murmur, which, when enraged, is heightened by a clashing of the teeth. Highly susceptible of anger, that anger is always furious, and often capricious. However mild he may appear before his master, and even obedient when tamed, he ought to be distrusted, and treated with circumspection. It is most dangerous to strike him on the tip of the nose, or to touch him on the parts of generation.

He is capable of some degree of instruction. There are few who have not seen him stand on his hind legs, or dance in a rude and awkward manner to tunes either sung or played on an instrument. But in order to tutor him with success, it is necessary that he be taken young, and held in constant restraint. A bear which has passed his youth, is not to be tamed, nor even held in awe; and shews himself, if not intrepid, at least fearless of danger.

Formerly the bear was an inhabitant of this country, and was included in the ancient laws and regulations respecting the game, and beasts of chase.

After the race became exterminated, and they were no longer found, in their natural state, in this island, they were frequently imported from other parts, for the purpose of baiting, &c. This cruel pastime was considered as a fashionable diversion, even so late as the reign of Elizabeth, when the courtiers of both sexes were accustomed to assemble, in order to partake of this savage entertainment.

THE WHITE, OR POLAR BEAR. (*Plate* 17.)

Is a species very different from the common bear, and far exceeds it in size; some of them being above thirteen feet long, with limbs of a prodigious size and strength. Its hair is of a yellowish white, long and rough: its ears are short and round, and its teeth large.

The ferocity and undaunted courage of this animal has been remarked by all who have visited those frozen regions, where it makes its abode.

The crew of a boat belonging to a ship in the whale fishery, shot at one of these creatures at some distance, and wounded it. The bear, far from being intimidated, set up the most dreadful yells, and ran along the ice directly for the boat. Before it could reach it, a second shot was fired, by which it was again wounded. This served only to increase its fury. It presently swam to the boat, and, attempting to board, reached its fore paw upon the gunnel;

but one of the crew having a hatchet, cut it off. The animal, however, still continued to swim after them until they arrived at the ship, although several shots were fired, which also took effect. But on reaching the ship, it immediately ascended the deck. The crew having then fled into the shrouds, it was pursuing them thither, when a shot at last laid it dead. Such an instance of ferocious resolution is not, perhaps, to be found in any other of the quadruped race. It will not, indeed, hesitate, to attack a party of armed men, and has scarcely ever been known to retreat at the sight of any danger.

The attachment of this animal to its young is not less remarkable than its determined courage. The white bear will rather die than desert its offspring. When wounded and dying, it embraces its cubs to the very last moment of its existence, and when by any means deprived of them, bemoans the loss with the most piteous cries.

The sagacity evinced by these quadrupeds in searching for prey, is particularly worthy of attention. The Hon. Robert Boyle informs us, upon the authority of a friend, that the smell of the white bears about Greenland, notwithstanding the severity of the climate, is extremely acute; and that sometimes when the fishermen have left the carcase of a whale floating on the sea, three or four leagues from the shore, whence it could not be seen, these animals will stand at the brink of the water, and, raising themselves on their hind legs loudly snuff in the air, and drive it, as it were, against their snout with their fore paws, and when satisfied what point the odour comes from, they will plunge into the sea, and swim directly towards the carcase.

The flesh of this animal is white, and tastes like mutton: its fat is melted into train oil; and from the feet an oil is extracted, which is found of considerable use in medicine. Thus, you see that providence has ordained that the white bear, although placed in the icy solitudes of the polar regions, should yield its tribute of utility to human industry and enterprize.

The white bear inhabits only the coldest regions, and is seldom found on this side of the polar circle, unless when driven thither on the fields of ice by storms. It abounds chiefly on the shores of Hudson's Bay, Greenland, Spitzbergen, and Nova Zembla. They feed on fish, seals, and the carcases of whales.

THE WOLF. (*Plate. 18.*)

The Wolf inhabits Europe, Asia, Africa, and America, but has long been extirpated from Great Britain. His head is long, his nose pointed, his ears erect and sharp, his tail bushy, his legs long, and the colour of his body pale brown. His eyes sparkle with fury and wildness. He is larger than the dog, fierce and cruel, but suspicious and cowardly; he flies from man, and seldom ventures out of the woods, but when urged by hunger. He will then, not only attack men, horses, dogs, and cattle of all kinds, but even tear open the grave. His sense of smelling is so acute, that he scents carrion at the distance of a league. Wolves have been known to follow armies and devour the dead such of them as have tasted human flesh, ever afterwards attack men, prefers the shepherd to his flock, devour women, and carry of their children. The neck and jaws of the wolf are so strong, that he carries a sheep in his mouth, and outruns the shepherd. His bite is terrible, and always cruel in proportion to the smallness of the resistance, for when an animal can defend itself, he is cautious and circumspect. In Persia, wolves, when young, are learned to dance, or rather to perform a kind of wrestling with a number of men; those well educated sold at 500 French crowns. The wolves of North America are small, and when reclaimed, are the dogs of the Natives. These facts prove, that time and restraint may operate changes on the temper of the wolf, though Buffon's experiments were unsuccessful. He brought up several wolves, when young they were docile and even caressing, but at the age of 18 months, or two years, it was necessary to chain them. One brought up in a court along with fowls, had never attacked any of them, but at the age of 18 months, as a first essay, he killed the whole in one night. Another having broken his chain, run off, after killing a dog with which he had lived in great familiarity. Good blood-hounds are necessary to hunt the wolf, and they need to be coaxed and encouraged in the pursuit; for all dogs have an aversion, and shudder at the first sight of him. If he falls into a snare, he is so terrified that he may be killed or taken alive without resistance. If several wolves are seen together, it indicates an attack on some large animal, for they are solitary and hate society; even the males and females are seldom together. When the female is about to bring forth, she prepares, in the recesses of the forest, a commodious bed of moss for her young. The young are born blind.

So insatiate is the appetite of the wolf, that to allay his hunger, he will sometimes fill his stomach with mud; and although nature has endowed him with every thing that can fit an animal for the pursuit and seizure of its prey, as well as with the capability of subsisting a long time without food, it is often his fate to perish with hunger; for being driven by man into the sequestered retreats of forests and mountains the wild animals escape him by their swiftness or artifice, and those he can take are not sufficiently numerous to satisfy the cravings of his voracious stomach.

About the year 1764, an animal of this kind committed the most dreadful ravages in some particular districts of Languedoc, and soon became the terror of the whole country. According to the accounts given in the Paris gazette, he was known to have killed twenty persons, chiefly women and children; and public prayers are said to have been offered up for his destruction.

That wolves were once an exceeding great nuisance in this country is evident, from the rewards formerly given for their destruction; but happily the race has here been long since extirpated. King Edgar attempted to effect this beneficial purpose, by remitting the punishment of certain crimes on producing a specified number of wolves tongues; and in Wales, certain taxes were commuted for an annual tribute of wolves' heads. Some centuries afterwards they increased to such a degree, as to become an object of the attention of government, and great rewards were given for destroying them. Camden informs us, that certain lands were held on the condition of hunting and destroying the wolves that infested the country. In the reign of Athelstan, wolves abounded so much in Yorkshire, that a place of retreat was built at Flixton, near Scarborough, for the protection of passengers against their attacks.

The ravages of these animals being always the most terrible in winter, when the cold is the most severe, the snow in the greatest quantity on the ground, and food the most difficult to procure, our Saxon ancestors distinguished the month of January by the appellation of wolf month. An outlaw was also among them denominated wolf-shed, or one that was out of the protection of human society, and liable to be destroyed by the wolves.

Wolves infested Ireland many centuries after their extinction in England, but now they are extirpated in that island; and their numbers are very much diminished in most of the countries of Europe.

THE CIVET. (*Plate* 19.)

Which produces the famous drug, and perfume, whic goes by its name, though it be a native of the warm climate of Asia and Africa, under proper management to defend i from the cold, will live in temperate countries. Number of them are kept in Holland; but, though they breed, anc yield their perfume in that country, they soon degenerate. The perfume is of a grease-like substance, and secreted ir an aperture under the tail. It is collected two or three times a-week; and this is affected by keeping the animal in a narrow cage. open at one end. Through this opening it is drawn a little out by the tail, and secured by the hind legs. The command of the sac that contains the perfume being thus obtained, the matter is scraped from all its internal sides, with a small spoon, and is then put into a vessel and carefully covered up. This odorous liquor is always in proportion to the quantity and goodness of the animal's food. Boiled flesh, eggs, rice, birds, and fish, are the kinds that it prefers. The civet, in a wild state, preys on fowls, and is very ferocious, but is easily tamed so as to be approached and handled without danger; it is active and nimble; its eyes sparkle in the dark; it drinks little; its back and sides are cinereous, and covered with large dusky spots. It generally measures about two feet in length, the tail twelve inches.

THE GENET (*Plate* 19)

The body of which is longer than that of the Martin; its head is long and slender, with a sharp muzzle; its ears are a little pointed; its hair soft smooth, and shining, of a tawny-red colour, spotted with black; along the ridge of the back there is a kind of mane of long hair, which forms a black line from head to tail; the spots on the sides are round and distinct, those on the back almost close; its tail is long, and marked with seven or eight rings of black. From an orifice beneath its tail, it yields a kind of perfume which smells faintly of musk.

This creature is found in Turkey, Syria, and Spain. We are told by Belon, that he saw Genets in the houses at Constantinople as tame as Cats; and that they were useful to the inhabitants in destroying rats, mice, and other vermin.

It is a most beautiful, cleanly, and industrious animal, and very active in pursuing its prey. Its nature is mild and gentle; its colours beautifully variegated and its fur valuable.

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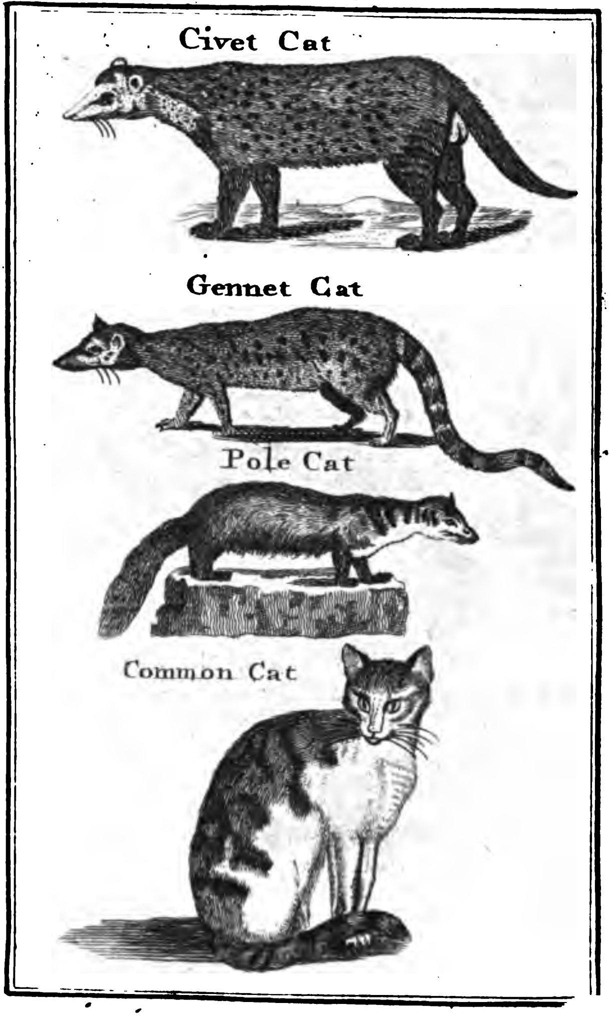
Plate 19



Civet Cat

Gennet Cat

Pole Cat

Common Cat

THE MUSK.

There have been various accounts given of this animal by naturalists and travellers; by whom it seems to have been taken notice of more for the perfume which it produces, than for the information of the curious enquirer into its nature and qualities: For we are still at a loss what rank to assign it among the various tribes of quadrupeds. It has no horns; and whether it ruminates or not is uncertain: But by its wanting the fore-teeth in the upper jaw, we are led to suppose that it belongs either to the Goat or the deer kind.

The Musk of Thibet resembles the Roe-buck in form: It is somewhat above two feet in height at the shoulder; the hind legs are longer than the fore legs, being two feet nine inches high from the top of the haunches; in length, it is three feet six inches from the head to the tail; the head is above half a foot long. Its upper jaw is much larger than the lower; and on each side of it there is a slender tusk, near two inches long, which hangs down, bending inwards like a hook, and very sharp on the inner edge: Its lower jaw contains eight small cutting teeth; and in each jaw there are six grinders. Its ears are long, small, and erect, like those of a Rabbit. The hair on the whole body is long and rough, marked with small waves from top to bottom; the colour is a rusty-brown; under the belly and tail it is white; on each side of the lower jaw there is a tuft of thick hair, about an inch long; its hoofs are deeply cloven, slender, and black; the spurious hoofs are likewise very long; its tail is not more than two inches in length, and hid in the hair.

The Musk is found in the kingdom of Thibet, in several of the Chinese provinces, about the lake Baikal, and near the rivers Jenisan and Argun, from lat. 60 to 45; but seldom so far south, except driven by great falls of snow to seek for food in more temperate climates. It is naturally a timid animal, and endowed with a quick sense of hearing. Its solitary haunts are usually mountains, covered with pines; where it avoids mankind, and, when pursued, flies to the highest and most inaccessible summits.

The perfume produced by this animal, which is so well known in the fashionable circles, and of late so much used in the practice of physic, needs little description: It is found in a bag or tumor, nearly of the size of a hen's egg, on the belly of the male only. These bags the hunters cut off, and tie them up for sale; many thousands of which are sent over annually to Europe, besides what are consumed in different parts of the East. To account for this great consumption, it is supposed that the musk is frequently adulterated and mixed with the blood of the animal. It comes to us from China, Tonquin, Bengal, and Muscovy; but that of Thibet is reckoned the best, and sells at a much higher price.

The flesh of the males, especially in the rutting season, is much infected with the flavour of the musk; but is, nevertheless, eaten by the Russians and Tartars.

THE POLE CAT, OR FOUMART. (*Plate* 19.)

Is an animal not uncommon in this country: in shape it resembles the weasel, but far exceeds it in size, being not less than from fifteen to eighteen inches in length, exclusive of the tail, which is about five or six: it is generally of a deep chocolate colour. Its habits are perfectly similiar to those of the weasel, and its mode of living in every respect precisely the same. It is exceedingly fierce and bold. When attacked by a dog, it fastens upon his nose with so keen a bite, as often to compel him to desist; and when unable to conquer, will at least defend itself to the last extremity.

In regard to this animal's mode of procuring subsistence, a curious circumstance was once observed.

During a severe storm, a foumart was traced in the snow from the side of a rivulet to its hole, which was at some distance. As some marks were observed in the snow, for which it was not easy to account, curiosity suggested the expedient of examining the hole, where eleven fine eels were found which had been the fruits of its nocturnal excursions to the rivulet; and the marks in the snow which had appeared so singular, were then discovered to have been made by the writhings of the eels in the animal's mouth while it was dragging them to its den. It would be a curious subject of investigation to enquire by what means this crafty animal can obtain a booty, the seizure of which appears so difficult.

Although the smell of this quadruped is in the highest degree fœtid and disagreeable, yet the skin is used as other furs, and retains no offensive odour. It is, however, far inferior in value to the fur of the sable, the ermine, and other natives of the northern regions. The skins sell from eighteenpence to half a crown a piece.

THE WILD CAT. (*Plate* 19.)

The form of the wild cat is the same as that of the domestic, it exhibits the same characteristic propensities: the only observable distinction is, that the wild cats are larger and stronger than the tame kind, and their fur is much longer, but very soft and fine.

The domestic Cat, if suffered to escape into the woods, becomes wild, and lives on small birds and such other game as it can find there. It likewise breeds with the wild one. It is no uncommon thing for females of the tame species to quit their houses during the time they are in season, go in quest of male wild Cats, and return home to the same habitations impregnated by them. It is by this means, that some of our domestic Cats so perfectly resemble those of the wild breed.

The hair of the wild Cat is of a pale-yellow colour, mixed with grey; a dusky list runs along the middle of the back, from head to tail; the sides are streaked with grey, pointing from the back downwards; the tail is thick and marked with alternate bars of black and white.

This animal inhabits the most mountainous and woody parts of this island, living in trees, and hunting for birds and small animals, such as rabbits, hares, rats, mice, moles, &c. It frequently makes great havoc among poultry; will even kill young lambs, kids, and fawns; and is the fiercest and most destructive beast of prey in this kingdom.

It is taken either in traps, or by shooting. There is frequently danger in the latter mode; for if it be only slightly wounded, it will attack the person who has injured it, and in that case is not easily repelled.

Wild Cats are found, with very little variety, in almost every climate. They existed in America before its discovery by the Europeans. One of them was brought to Columbus, which was of the ordinary size, of a brownish-grey colour, with a long tail.—They are common in many places of Asia and Africa.

Some wild Cats have been taken in this kingdom of a most enormous size; we recollect one having been killed in the county of Cumberland, which measured, from its nose to the end of its tail, upwards of five feet.

The province of Chorazan, in Persia, is particularly famous for a most beautiful Cat, about the size of the tame one, of a fine grey colour, without any mixture, and as soft and shining as silk. It is darker on the back, soften degrees towards the breast and belly, where it is al white.

The tail is long, and covered with hair, five or six inches length. The animal frequently turns it upon its back, li a squirrel; the point of it resembling a plume of feathers.

The Cat of Angora differs greatly from the wild Cat, i having much longer hair, especially about the neck, where it forms a fine ruff, and gives the creature a Lion-like ap pearance. Some of these are of a silvery whiteness, and si ky texture; others are of a dun colour, mixed with yellow.

THE DOMESTIC CAT. (*Plate* 19.)

Is, when young, of all animals the most sportive and playful, but as its years increase, it begins, to grow more serious, and also more artful.

Although cats cannot absolutely see in the dark, as is often asserted, yet they see much better in the twilight, or when it is dusky, than in the broad day light. During the day the pupil of this animal's eye is contracted, but in the dusk it resumes its natural roundness. It then enjoys perfect vision, and takes advantage of it to discover and seize its prey.

The nocturnal meetings of these creatures seem a curious peculiarity. They call one another together by loud cries, and sometimes meet in great numbers. When they are met, they look at one another in a menacing manner, writhe themselves into a thousand threatening postures, and without any apparent cause, fly upon one another with the most furious rage, with teeth and claws indiscriminately wounding and lacerating one another.

These furious engagements never happen but in the night: they sometimes continue several hours, and the most horrid squalls accompany them through the whole time of their duration.

The cat is fond of certain perfumes, and is particularly attracted by the smell of valerian: it has a remarkable aversion to mire and water, and is a handsome, cleanly and agreeable creature.

The perseverance of the cat in watching its prey is remarkable, and indeed extraordinary. This animal loves to bask in the sunshine, and is exceedingly fond of sitting by a warm fire, so that from these circumstances one might naturally suppose it to be unable to bear the cold; and yet, in watching its prey, it will frequently sit motionless several hours together among snow in the severest weather.

Some naturalists have treated the cat somewhat hardly in their descriptions, and have represented it as insensible of kindness, and incapable of attachment, which is certainly a mistake. It is as much attached to its master as any other animal, except the dog, and expresses its affections by the most engaging caresses, and the most agreeable purring. It is also reproached with treachery and cruelty, but, are not the artifices which it uses the particular instincts which the all-wise Creator has given it in conformity with the purposes for which it is designed? Being destined to prey upon so lively and active an animal as the mouse which possesses so many means of escape, it is requisite that it should be artful; and, indeed, the cat, when well observed, exhibits the most evident proofs of a particular adaptation to a particular purpose, and the most striking example of a peculiar instinct suited to its destination.

A celebrated writer says, that "the cat is one of those animals which has made the least return to man for his trouble by its services;" but it is certain that it renders very essential services to man, and merits well his kindness and protection. Authors seem to delight in exaggerating the good qualities of the dog, while they deprecate those of the cat: the latter, however, is not less useful, and certainly less mischievous than the former. The delight, however, which this animal takes in sporting with the unfortunate victim that falls under its power, in prolonging its tortures, and putting it to a lingering death, it must be confessed is not a very favourable trait of its character.

The cat is very much attached to the place where it has been brought up, or long made its abode; and instances frequently occur of cats having returned to the place from whence they had been carried, although at several miles distance, and even across rivers, when it was impossible that they should have any knowledge of the road.

In former times this animal was held in so high estimation, that its preservation constituted, in some countries, an object of public attention. In the reign of Howel, the good king of Wales, who died A. D. 948, laws were made to fix the price of valuable animals, among which the cat was included, on account of its utility and scarcity. The price of a kitten, before it could see was fixed at one penny: after its eyes were open, which is in the space of eight or nine days from its birth, it was advanced to two-pence; and as soon as proof could be given of its having caught a mouse, its value was, in consequence of that exploit, rated at four-pence; a very considerable sum in those days when money was so exceedingly scarce, being at least equivalent to the price of a good sheep.

By the same laws, if any one should steal or destroy a cat that guarded the prince's granary, he was to expiate the crime by the payment of as much wheat as would form a heap high enough to cover the cat's tail when it was suspended by it with the nose touching the floor, or by the forfeiture of a good ewe, with her fleece and lamb. It was likeiwise provided, that when a cat was sold, its sight and hearng should be perfect, and its claws whole, and if a female, a good nurse to kittens: if any effect were found in regard to these qualities, the seller was to forfeit to the buyer one fourth part of the price.

From these circumstances it appears, that the cat was not originally a native of these islands, and that great pains were once taken to preserve and improve the breed of an animal which is now grown so common, that it is held in less estimation than it deserves.

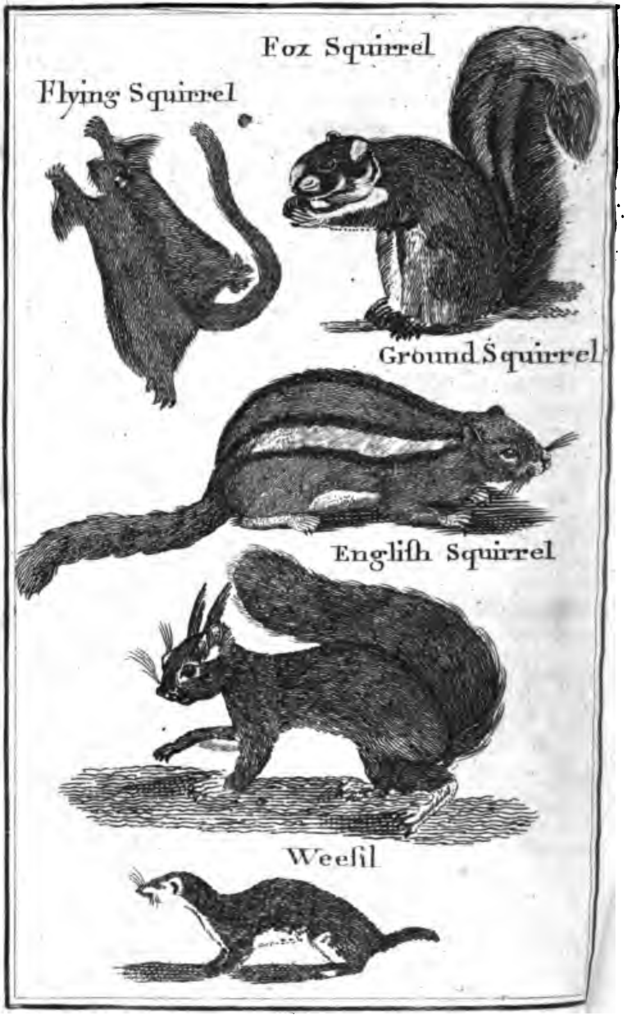
It is, a disagreeable but just observation, that in many cases the favours of Providence excite not only less admiration, but also less gratitude from being liberally bestowed and plentifully diffused.

The maternal affection of the cat is very remarkable, and she has frequently been known to nurse the young of other animals with the utmost care and tenderness.

In the Naturalist's Calendar, a very curious circumstance of this nature is stated: A boy had taken three young squirrels in their nest, put them under a cat which had recently lost her kittens, and found that she suckled them with the same affection as if they had been her own progeny. But so many persons flocked to see this phænomenon, that the foster-mother at length became alarmed for the safety of her charge, and hid them over a ceiling, where one died.

Mr. White, in his Natural History of Selborne, observes, that he had a little helpless leveret brought to him, which was nourished by the servants, with milk from a spoon; and about the same time his cat kittened, and the young were dispatched. The leveret was soon lost, and was supposed to have fallen a prey to some cat or dog; but one evening, a-

Plate 20


Fox Squirrel
Flying Squirrel
Ground Squirrel
Engliſh Squirrel
Weeſil

bout a fortnight afterwards, as Mr. White was sitting in the garden, he observed his cat trotting towards him, and followed by the leveret, which she had nourished with the utmost affection.

When M. Baumgarten was at Damascus, he saw a large house which was solely used as a kind of hospital for cats, and was said to be completely filled with those creatures. On enquiring into the origin of this curious institution, he was informed that Mahomet, when he once resided there, kept a cat in the sleeve of his gown, and fed it carefully with his own hands; in consequence of which, his followers in this place paid the most superstitious respect to these animals, and supported them in this manner by public alms, which were very adequate to the purpose.

THE ENGLISH SQUIRREL. (*Plate* 20.)

The Squirrel is a beautiful little animal, which is only half-wild: and for its gentleness, docility and innocence of manners, deserves to be exempted from the present class. It is neither a carnivorous nor an injurious animal; and though it sometimes seizes on birds, its general food consists of fruit, almonds, hazel-nuts, beach-mast, and acorns. It is neat, cleanly, alert, lively, and industrious. Its eyes, are full of fire; its countenance, sharp; its body, nervous; and its limbs, supple.

The beauty of its form, is farther embellished by a fine spreading tail, like a plume of feathers; which it raises above its head, and forms into a kind of shade.

Thes quirrel is a less quadruped than almost any other four-footed animal. It generally sits upright, and uses its fore-feet as hands. Instead of hiding itself in the earth, it is continually in the air; by its lightness and activity it resembles the feathered tribe; and like them, rests upon the branches of trees, leaps from one to another, and in the highest of them, builds its nest. It avoids water more than the earth; and it is even asserted, that when this animal is obliged to cross a river or stream, it uses the bark of a tree, or some light woody substance, as a boat, while its tail supplies the place of sails and a rudder. In summer, it collects a quantity of nuts which it deposits in the cavity of some old tree, and to which it has recourse for provision in winter; and such is the agility of its body, that it can, in an instant, climb the smoothest beech-tree.

THE GREY, OR FOX SQUIRREL (*Plate* 28.)

Is about the size of a young Rabbit; its ears are short, and not tufted at the ends; its hair is grey, mixed with black; its tail is long and bushy, of a grey colour, variegated with black and white. It is common to both continents; in Sweden and other northern countries it changes its colour in the winter. It is very numerous in North-America, and does incredible damage to the plantations; great flocks of them descend from the mountains, and lay waste the fields of maize, by eating the young ears. A reward of three-pence per head was given for every one that was killed; and such numbers were destroyed in one year, that Pensylvania alone paid in rewards the sum of 8000l. of its currency.

The Grey Squirrel makes its nest in hollow trees, with moss, straw, wool, &c. It lays up stores of provisions in holes made in the ground, which it visits occasionally when in want of meat: These are often destroyed by Swine; and sometimes so long covered with snow, that the Squirrels perish for want of food. They are not easily shot, but evade the gun with great quickness the moment they see it levelled. They are easily tamed; and their flesh is esteemed very delicate. The fur of these animals is very valuable, and is imported under the name of petit-gris.

THE FLYING SQUIRREL (*Plate* 29.)

Is peculiarly distinguished by a membranous continuation of the skin of the sides and belly, which extends from the fore to the hind feet, and assists it greatly in making leaps from one tree to another, frequently at the distance of twenty or thirty yards. Its head is small and round, and its upper lip cloven; its eyes are full, round, and black; and its ears small and naked.

This creature is found in all the northern regions, both of the old and new continents. It is more numerous in America than in Europe, is less than the common Squirrel, lives in trees, and sleeps in the day, but is extremely active during the night.

In the act of leaping, the loose skin is stretched out by the feet; whereby the surface of the body is augmented, the animal becomes lighter in proportion to its bulk, the acceleration of its fall is retarded, and it appears to sail or fly from one place to another. Where a number of them are seen at a time leaping, they appear like leaves blown off by the wind.

There are several kinds, differing much in size.—In the islands of the East-Indies there is a variety as large as a Hare, called the Taguan, or Great Flying Squirrel; which perfectly resembles the other in figure, and in the form of its lateral membrane. The head is smaller in proportion to the size of the body; the colour of the skin is dark-brown, mixed with white; the under part of the body whitish; the tail is brown, and grows gradually deeper towards the end, where it is black; the claws are long, thin, and hooked, like those of a Cat, which enable it to keep hold where it happens to fall: it also catches hold with its tail, which is long and muscular. It is a wild and timid animal. Its bite is so strong, that it can make its escape from a wooden cage with great facility.

THE GROUND SQUIRREL (*Plate* 20.)

Is very numerous in the forests of North-America, as well as the North of Asia —It burrows in the ground, and makes two entrances to its habitation; that if one should be stopped up, it may have access by the other. Its hole is formed with great skill, having several branches from the principal passage, each of which is terminated by a store-house, in which its winter food is deposited: In one is contained acorns, in another nuts, in a third maize, and in another chesnuts, which are its favourite food.

These animals seldom stir out during winter, or so long as their provisions last; when those fail, they sometimes work their way into places where apples are laid up, or into barns where maize is stored, and make great havock. During harvest, they fill their mouths so full with corn, that their cheeks are quite distended, and carry it off to their concealed store. They give great preference to certain kinds of food; and if, after filling their mouths with rye, they chance to meet with wheat, they discharge the former, that they may secure the latter.

The ground Squirrel is marked with a stripe of black, which runs along the ridge of the back; and on each side, a yellow stripe, bordered with black; its head, body, and tail are of a reddish-brown; its breast and belly white; its nose and feet of a pale-red colour; its eyes full and lively. It is very wild, bites severely, and is tamed with difficulty. Its skin is of little value.

THE WEASEL. (*Plate 20.*)

The Weasel, enters out-houses, granaries, and barns, where it makes dreadful havoc among rats and mice. It pursues them into their holes, and does more execution than any cat; but its other depredations undo the merit of this service. It climbs into pigeon-houses, and destroys the pigeons; and among poultry, it attacks chickens and young birds; it kills them by a single bite near the head, and then one by one carries off the whole. It also breaks the eggs, and sucks them with great avidity. Its robberies are always committed in the night, and it sleeps most part of the day. In Summer, it goes farther from houses, and is found along rivulets, in ruins, and in brush wood in search of birds. It is said the young can be tamed, and rendered familiar and caressing, by stroking it often on the back, and threatening, and even beating it when it bites. The weasel, when irritated, has a fœtid smell. The body is a tawny brown above, and white below. It is common in temperate and warm climates, but rare in northern regions.

THE STOAT, OR ERMINE.

So famous for its white fur, inhabits Russia, Norway, and Lapland. It is only on the approach of winter that it puts on this snowy covering; for its summer dress, and what it would constantly wear but in a northern region, is a light tawny brown. It in every respect resembles the weasel, but that it is larger and the end of its tail black. The Ermine is fond of eggs; and in Norway, when the sea is calm, it swims to the islands which lie near the coast, where there are vast quantities of sea-fowl. This little animal, ten inches long, kills both the rein-deer and the bear; but it succeeds by its smallness. It jumps into one of these animal's ears, when asleep, and adheres so fast that it cannot be disengaged. It likewise surprises eagles and heath-cocks; it fixes on them, and never quits them, even when they mount in the air, till the loss of blood makes them fall down. Its principle food, however, is mice, Neither the Ermine nor weasel eat honey.

THE FERRET

Is a native of warm climates, and lives in temperate countries only in a domestic state. It is easily tamed, but has a fiery eye, and is very irrascible. His body is a pale yellow, 14 inches long; the tail 5. Like the polecat, its odure is always disagreeable, but very offensive when irritated. They are equally the enemy of rabbits. It is said that the Ferret was originally brought into Spain from Africa, to free that country from the multitude of rabbits with which it was infested. When a ferret sees a rabbit for the first time, he flies upon it with fury: If it be dead, he bites it; but, if it be alive, he seizes it by the throat, or the nose, and sucks its blood. This ferocious instinct is made use of, in the tame ferret, to chace the rabbits from the holes, when they are caught and secured in nets. He is muzzled when he is let into the burrow, that he may not kill the rabbits, and that he may not be lost; for, when he is satiated with blood, he falls asleep.

THE MARTIN. (*Plate* 21.)

Among animals of this kind, the vessels which generate an unctious matter so offensively fœtid in some, produce a species of perfume in others. The Weasel, the Polecat, &c. have an effluvia of the first kind: the Martin, the Pine Martin, and the Civet, &c. of the latter. The Martin has a musky smell, which is, however, no farther removed from being offensive than that it is not disagreeable. The Martin is a lively active animal. He runs up rough walls with great dexterity, and finds an easy access to the pigeon and the hen-house. He seizes birds in their nests, and preys on mice, rats, moles, and is remarkably fond of honey. The fur of the Martin is of some value; it is ash-coloured at the bottom, chesnut in the middle, and tipped with black. The Martin is found in most parts of Europe; is 18 inches long; the tail 10.

THE SABLE

Is, of all the animals of the weasel kind, the most highly esteemed, and its fur is the most admired. A single skin, although not more than four inches broad, being sometimes sold for fifteen pounds, a circumstance which would be incredible, were it not attested by writers, who possessed every means of information on the subject. The fur of the sable possesses this peculiarity, that whatever way it is stroked it lies equally smooth, whereas all others when stroked contrary to the grain, give a sensation of roughness: its colour is a blackish brown, and the darkest are the most admired.

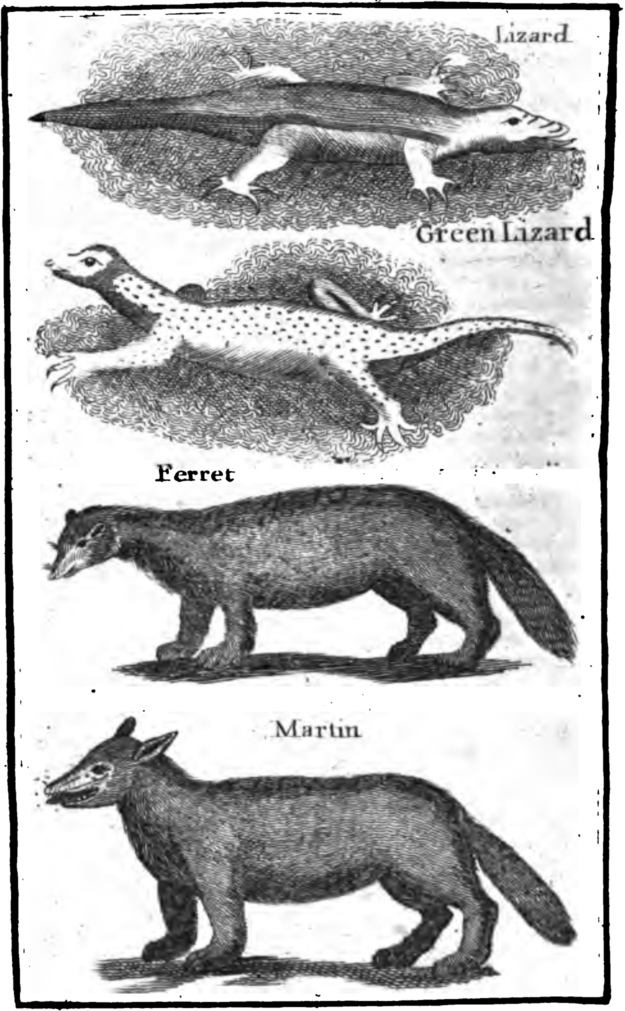
The sable resembles the martin in form, and nearly in size. It seems to be particularly fond of the shade, and inhabits the most imprevious woods, where it lives in holes in the earth by the banks of rivers, or under the roots of trees, it possesses great agility, and bounds with velocity from tree to tree. From the singular closeness of its fur, which is extremely well calculated for resisting the water; and from being frequently found in small islands, it is supposed by many naturalists to be amphibious.

This small but valuable quadruped, is a native of Siberia, Kamtschatka, and the islands which lie between that country and Japan; but scarcely any are found in European Russia, and still fewer in Lapland. Siberia, however, is the country where it most abounds, and which furnishes the greatest part of those valuable furs which constitute so lucrative a branch of Russian commerce. It is therefore in the immense forests of these desolate regions that the business of sable hunting is chiefly carried on. This is the employment of soldiers sent thither from Russia for that purpose, as well as of criminals sent into exile. Both are obligged to furnish annually a certain quantity of furs, and for their encouragement they are allowed to share among them all the skins they can procure above the specified number, which, in a fortunate hunting season, amount to a very considerable sum.

The hunters generally form themselves into small troops, each being directed by a leader of their own chusing. They shoot with a single ball, in order to injure the skin as little as possible; and frequently take them in traps, or kill them with blunt arrows.

The sable hunters frequently endure the utmost extremity of cold, hunger, and fatigue. They penetrate into the inmost recesses of those immense woods and wildernesses, with which the extensive and desolate regions of Siberia abound without any other means of tracing back their way than by marking the trees as they advance. Should they neglect this precaution, or through any inattention deviate from their track, they must inevitably be lost. Sometimes they trace the sables on the new fallen snow, place their nets at the entrance of their holes, and wait two or three days for their coming out, during which time they often suffer extremely from the inclemency of the weather, or the too early consumption of their provisions. In short, the hunting of sables is a serious and perilous employment, carried on in a rigorous climate, at an inclement season, and in the most desolate regions of the earth amidst an aggregate of hardships, of which we can scarcely form any idea.

Plate 21



THE LIZARD. (*Plate* 21.)

Lizards have a long naked body, four feet, with claws, and a long tail very sharp, like the crocodile, which resemble them almost completely, and which have been classed for that reason in the same family. Lizards run very fast, are about the thickness of ones finger, and the largest are not above three feet long. They haunt moist dark places where there are many flies and gnats. Several inhabit the water, and subsist on the eggs of fishes, also on small fishes and water-lentils.

This innocent animal is found in almost every country: it has no venom, does hurt to nothing, and renders every where an impotant service, by destroying myriads of insects that are troublesome and hurtful. It would be an excellent practice to entice them into, and nourish them in gardens, for they are to flies, what the cat is to the rat. There are many places where they are eaten, as likewise their eggs; those of the small species, are as large as peas, and those of the large as pigeon eggs. What is somewhat remarkable in them their tail grows again when it has been cut. Some are brown, green, marbled, of every sort of colour and agreeable mixture. Some of them have six toes on their feet, others four, and there are likewise some which have four on those before, and five on those behind. These toes are in some species tied together by a membrane like those of ducks; in others, they are fastened together two by two, or three by three.

THE GREEN LIZARD. (*Plate* 21.)

The green lizard, named the leaper, has the back green, and black and green spots upon the sides, the belly yellowish, and five toes very sharp. It is the most beautiful of our lizards; it frequents dry places, mountains, walls and sometimes gardens, or their neighbourhood. When surprised, it looks stedfastly, and opens its mouth; but when we wish to catch it it makes a leap, and escapes: thence comes its name. It is at most the length of the hand, and may be preserved long alive in bottles with a little wet moss and earth, provided we take care to give it now and then a fly, gnat, or other insect.

There is in Egypt a species of lizard called guardian or sentinel, because it keeps near the crocodile, and gives a sort of whistle when it sees men approach too near this place. It is three feet in length, and half a foot broad.

THE PORCUPINE. (*Plate 22.*)

So many singularities present themselves in the history of animals, that imagination sometimes runs riot, and constantly excited to expect, imputes to extraordinary appearances more extraordinary effects. This has been remarkably the case with many creditable accounts of the porcupine. It has been said, that the quills with which he is so curiously covered, he can throw to a distance, and inflict with them deep and dangerous wounds. It has been also said, that these quills are of such extraordinary structure, that of themselves, they will search their whole length into the flesh, if only their points are entered. But the one account is no more authentic than the other. The body of the porcupine is covered with quills in the hinder part, nine inches long. These he has the power of erecting. When an enemy approaches, he inclines on the side, rises up fiercely, and gores him with the erected prickles. As the strongest prickles are most easily detached from the skin, they have undoubtedly been often seen in the bodies of animals; and this perhaps, accounts for the marvellous relation, that was universally credited from the time of Pliny to Buffon. The porcupine is about two feet long, the quills which are expressly feathers without the vanes. are varied with black and white, the head is covered with bristles, ending in soft hair. It is a native of the warmest parts of Africa, but will live in temperate countries.

THE HEDGE-HOG. (*Plate 22.*)

The Hedge-Hog is so completely covered with strong short spines, that when it rolls itself together, it very nearly forms an entire ball of prickles, and is completely defended from the attack of the weasel, the pole-cat, or the dog. The fox, however, by wounding its feet, obliges it to unfold, that it may not be chocked with blood, when its destruction is easily effected. It has no other mode of defence than thus to form itself into a ball; it does not fly nor resist an attack, either with its feet or teeth; but no force will make it expand; the more it is harassed, the closer it rolls up, and the only way to succeed, is to plunge it in water. It eats little, and can remain a long time without food. It sleeps through the winter. It resides generally in small thickets and in hedges. It feeds during the night, and lives on roots fruits and insects.

Plate 22

Porcupine

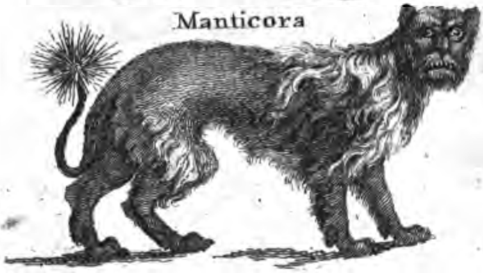
Badger

Hedgehog

Plate 23

Haena

Manticora



Antelope

THE BADGER (*Plate* 22.)

Resorts to the most retired parts of the forest, and there digs for himself a subterraneous abode, where he indulges his indolent and solitary disposition. As if day-light were painful to him, from this dark retreat he never ventures abroad but at night. He sleeps the greatest part of his time, and grows fat though he is neither ravenous nor eats a great quantity. He eats roots, nuts, grain, insects and frogs; but prefers flesh to every other food. During the winter, he is in a state of torper, like the marmot or dormouse; so that he may be said to sleep three-fourths of his life. The Badger is frequently deprived of his habitation by the Fox, who, unable to make him quit it by force, seizes him by standing centinel at the mouth of his hole, which he defiles with his dung, and where he continues to persecute him till he abandons the place. The badger runs very slowly; when he is overtaken by dogs, however, he makes a vigorous defence: He throws himself on his back, and with his teeth and claws, which are exceedingly strong, he inflicts the most dangerous wound. The young Badger is easily tamed, and will play with the dogs, and follow the person who feeds him. The Badger is a clumsy animal, covered with long rude hair, ash-coloured on the body; the belly and legs black. He is very cleanly. The male and female are seldom seen together. The female makes a commodious bed for her young; the herbage which compose it she cuts down, bundles up, and trails along with her feet to the bottom of her hole. She brings forth three or four at a time. The badger is a scarce animal, but is found in most countries of Europe and Asia.

THE HYÆNA. (*Plate* 23.)

This ravenous animal, without being one of the largest, is still one of the most formidable. More furious by far than the wolf, it is neither afraid of the tiger nor the leopard, and even defends itself against the lion. It seeks its prey both in the night and day, and though it sometimes eats the young roots of trees, it is, however, insatiable of the flesh of animals, and even that of man. It is unfortunate for the country that this monster inhabits, if it be once satisfied with this; it then becomes so eager for carnage and blood, that, in a short while, it will destroy large flocks of cattle, and devour a number of people; nor does it cease its rapine so long as its eyes, or other senses of hearing and smell, give it notice of any thing to be killed. Nor has it less appetite for carcases: thus, it digs the church-yards several feet deep to come at them; it likewise attends armies to the field of battle, where it finds a number of carcases, either above ground or scarcely covered.

The hyæna inhabits only the warm climates of Africa, and of Asia; for, though this name has been bestowed on some carnivorous animals of a singular shape that have appeared occasionally in France, and have committed depredations, similar to those of the hyæna, there is still reason to suspect that they were different. It has longer legs than the wolf, the body thicker, the hair of a yellowish brown, the ears long and naked, and the muzzle flat. It lives in the holes of rocks, or in holes under ground, and the duration of its life is from twenty to thirty years. It goes almost constantly with the head low; and as its neck is stiff and short, it is obliged to turn the body to look to one side, in the same manner as the hog and the crocodile. It can support its hunger for an astonishing time, and leap to a prodigious distance; two qualifications which increase greatly the difficulty of taking it, and the danger of the pursuit. A hundred or two hundred peasants armed with stakes and stones, and accompanied with a number of dogs, have been frequently seen to chace a single hyæna, without being able to take it; even companies of soldiers and huntsmen better equipped, have frequently met with no better success.

The flesh of the hyæna is very ill tasted, and its skin is not of much use. It is impossible to tame it, however young it be taken, and whatever method we make use of. It is seldom brought alive into Europe.

THE MANTICORA. *(Plate 23.)*

The Manticora or, (according to the Persians,) devourer, is bred among the Indians; it has a triple row of teeth beneath and above. It is about the size of a tyger, its face and ears resemble a man's; its shoulders are shaggy like a Lion's; and its tail like a Scorpion's, armed with a sting, and sharp pointed quills. His voice is like a small trumpet or pipe. He is so wild that it is very difficult to tame him; and as swift as an Hart. With his tail he wounds the hunters, whether they come before or behind him. When the Indians take a whelp of this beast, they bruise its buttocks and tail, to prevent its bearing the short quills; then it is tamed without danger.

THE ANTELOPE. (*Plate* 23.)

The species of this animal constitute a very numerous race, and till lately, few except the common antelope, appears to have been distinctly known.

Modern naturalists, from the best observations, have proved, that the antelopes have characters sufficiently appropriate to constitute a distinct genus; though Linnæus has not mentioned more than six of the species, and included even these under the genus Capra, or goat; Buffon makes only twelve; but some others enumerate more than forty.

The distinguishing characters of this tribe are as follows: —horns differently constructed from those of the deer and goat kind. being ringed, or annulated round, and having longitudinal depressions running from the base to the point: on the fore legs they have bunches of hair, a streak of brown, red, or black, running along the inferior parts of their sides, and three whitish streaks on the internal sides of the ears.

Besides these, there are commonly found several others, which are obvious to every attentive observer.

Unlike the deer, their horns are permanent, they have a gall-bladder, and enjoy brouzing on shrubs rather than on grass. In size, and delicacy of conformation, they resemble the roebuck, having deep pits under the eyes like that animal, and hair of the same nature and colour; the bunches of hair, of which we have above spoken, are on the fore legs of the antelope, and on the hind ones of the roe-buck. Hence therefore, they seem to be of a middle nature a kind of intermediate link between the deer and the goat, it being difficult to pronounce where the one begins and the other ends.

Antelopes are natives of the torrid regions, or the warmer parts of the temperate zone: it is, however, very remarkable, that not a single species of this animal has ever been discovered in any part of the new world, although we might reasonably conclude that the warmer parts of south America would be well suited to his nature, habits, and feelings.

Asia and Africa are the only countries where they abound, and there they multiply prodigiously, frequently forming herds of two or three thousand; some of them inhabit the vallies and plains, but they generally delight in hilly countries, taking pleasure in ascending and descending the steepest and most tremendous declivites and precipices, a practice for which it seems by nature peculiarly adapted, its limbs being exceedingly slender, and sinewy, the hoofs cloven, and its hind legs longer than the fore ones.

The antelope is equal, if not superior in swiftness to th roe, running along in one uninterrupted course, while the latter bounds forwards in his progress.

This is, perhaps, almost the only animal that is not offended with the smoke of tobacco; with the scent of which the antelope, however, is so much delighted, that, notwithstanding its natural timidity, it will approach very near a person who is smoking; in which situation it is not unfrequently shot or ensnared.

The antelope in his disposition is restless, inoffensive, and cautious, a whole herd being frequently alarmed by the slightest and most distant sound, and starting away with incredible swiftness.

The eastern grandees, hunt them with falcons, which, fastening themselves betwixt the horns, generally pick out the eyes of these animals, no quadruped being able to overtake them in fair running.

In Africa the following stratagem is frequently adopted by the natives. They fix a noose about the horns of a tame antelope, trained for the purpose, in such a manner *that* when he is sent into the herd, which instantly surround and butt at him, they get entangled in the noose, till the hunters, who lie in ambush for the purpose, come up, and easily secure them.

THE GNU

BEARS in part a resemblance to the horse, to the ox, and to the stag, and is characterised as an antelope, principally by the pores under the eyes. He is as large as a middle sized horse, and his body bears the same elegant proportions. He has a stiff, erect mane; and his tail is furnished with long hair: His head is like the head of the ox, horned, thick, and large; like the deer, his legs are long, slender, and elegant. He is a lively and irritable animal; and, when pursued, exhibits a vicious disposition by curveting, plunging, flinging out behind with one or both legs, and butting against mole-hills with his horns. It inhabits the south of Africa, where it has obtained its name from the Hottentots, on account of its cry. The voice of the tame fawn, and the bleating of the common calf, are, however, quite different. The flesh of the Gnu is agreeable, and very nourishing food.

THE LYNX. (*Plate* 24.)

RESEMBLES nearly a wild cat, with the difference of being rather larger, much bolder, since it attacks not only the

Plate 24

Lynx

Cameleon

wild cat, but also other animals much larger than itself, such as the stag, boar, &c. of which it sucks the blood, and opens the scull, to eat the brain, whilst it rejects their flesh to feed on that of birds, squirrels, and weasels. It remains in the most impenetrable parts of the forest, whether in Europe, Asia, or America. It darts from trees upon its prey, fixing itself by their throat, and sucking their blood, till they fall down dead. However, the boar sometimes gets rid of it by penetrating into close thickets, but the poor stag never escapes it.

On the body, its hair is of a whitish grey, spotted with black, and, on the tips of the ears, it is long and black. The female produces yearly from three to five young at a birth, and they live commonly from ten to fifteen years. The skin of the lynx affords a pretty valuable fur; the best of them come from Siberia.

THE CHAMELEON (*Plate* 24.)

Is an animal of which the head is about two, the body four, and the tail five inches long. In form, it not a little resembles the crocodile; but the thickness of its body varies considerably at different times, as it possesses the faculty of blowing itself up from one inch to two in depth; and this power of inflation and contraction is not confined to the body, but also extends to the legs and the tail.

The colour of this animal is its most remarkable peculiarity. The salamander has not been a more distinguished subject of ignorant misrepresentation, than the chameleon has been of philosophical enquiry. The surface of its skin is unequal, but soft; And when the creature is at rest in the shade, the eminences appear of a blueish grey, and the intermediate species of a pale red and yellow. When viewed in different lights, it assumes every tint that can possibly be imagined; and no two spectators could ever agree concerning its true colour. From this circumstance it derives its celebrity, and on this account has, in all ages, been introduced by moral writers as the emblem of a fickle and inconstant mind.

THE FOX. (*Plate* 19.)

This animal has always been famous for his artifices; and the reputation he has thus acquired, he partly merits. What the wolf cannot accomplish but by his superior strength, the fox accomplishes by his cunning. Without attempting to oppose either the shepherd, his dog, or his flock, he finds an easier way to subsist. Patient and prudent, he waits the opportunity for depredation, and varies his conduct accordto circumstances. Though as indefatigable, and more nimble than the wolf, he does not trust entirely to his swiftness, but contrives for himself an asylum, to which he retires in cases of necessity, and in which, sheltered from danger, he brings up his cubs.

The fox generally fixes his residence at the edge of a wood, and not far from a cottage, or hamlet. He listens to the crowing of the cock and the cackling of other domestic fowls, can scent them at a considerable distance, and seizes his opportunity. If he is able to get into the yard, he begins by making a general destruction: after which, he carries off a part of the spoil, hides it at some convenient distance, and again returns to the charge, taking off another fowl in the same manner, which he hides also, but not in the same place: and thus he perseveres, till warned by the approach of day, or the noise of the family, he finely retires. He practices the same art, when he finds birds entangled in snares laid by the fowler, which he anticipates very expertly; snatches them out of the snare, conceals them in different places, leaves them there some times for two or three days, and is never at a loss to recover his hidden treasure. He is equally alert in seizing young hares and rabbits, before they have strength to escape him; and when the old ones are wounded and fatigued, he is sure to seize them in the moment of distress. In the same manner, he finds out the nests of partridges and quails, and seizes the hens as they sit.

The fox is so voracious, that, when he has no better food, he devours rats, mice, lizards, toads, and serpents, Insects and shell-fish sometimes serve him for food. In vain does the hedge-hog roll itself into a ball to oppose him. Wasps and wild bees are attacked by him with equal success. Though at first they fly out upon their invader, and actually oblige him to retire, yet this repulse is but for a few minutes, till he has rolled himself upon the ground, and crushed such as may have stuck to his skin. He than returns to the charge, and at length, by dint of perseverance, obliges them to abandon their combs, which he greedily devours.

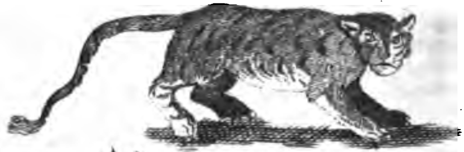
Young foxes are produced blind, and like dogs, are eighteen months or two years in reaching their full growth, and they live about thirteen or fourteen. The senses of the fox are as good as those of the wolf; his sentiment is more acute, and the organ of his voice is more supple, and perfect.

Plate 25

Fox

Racoon

Sagoin



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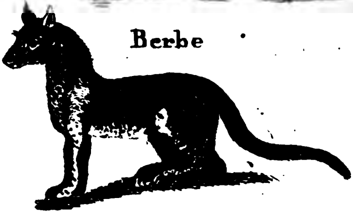


The wolf is never heard but by dreadful howls; the fox only yelps, barks, and sends forth a moanful sound, resembling the cry of the peacock. His tone, too, are different, according to the different sentiments with which he is affected. He has one sound expressive of desire, a second of murmur, a third of sorrow, and a fourth of pain. The latter is never heard, but in the instant he is wounded by a shot, and has lost the use of some member; for, like the wolf, when attacked with cudgels, he never murmurs, but will defend himself with obstinacy, and fight, in silence, to the last. He bites dangerously, and with such determined fury, that, in order to make him relinquish his hold, ponderous wood, and even iron bars, are necessary.

The flesh of the fox is not so bad as that of the wolf: dogs, and even men, eat it in autumn, especially if the animal has fed on grapes; and, in winter, good furs are made of his skin. He sleeps so sound, that however closely approached, there is no great danger of awaking him. When he only means to rest himself, he stretches out his hind legs and remains flat upon his belly. In this posture, he watches for the birds as they perch on the hedges; which they no sooner perceive, than they give each other warning of their danger. The jack-daw and the magpie, in particular, often follow him to the distance of some hundred paces, towering beyond his reach, and with cries reiterated, apprize others to beware.

Of all wild animals, the fox is most subject to the influence of climate; and there are found nearly as many varieties in this species, as in that of any domestic animal. The generality of French foxes are red; of some, the hair is of a greyish cast; and of all, the tip of the tail is white. In the northern countries, we find foxes of all colours.

THE RACOON *(Plate 25.)*

Is common in many warm countries, particularly in several parts of the new continent It also inhabits the mountains of Jamaica, whence numbers descend into the plantations, and make great havoc among the sugar canes, of which they are remarkably fond. They freqently do incredible mischief in one night's excursion. The planters devise various methods of destroying them. but they are so numerous as to render their extirpation impossible, and it is ex-exceedingly difficult to prevent their depredations.

The racoon possesses great agility; by the help of its claws, which are extremely sharp, it climbs trees with great ease. When tamed, it is good-natured and sportive, but busy and inquisitive as a monkey. It examines every thing with its paws, and makes use of them as hands to lay hold of every thing that is given it, as well as to carry victuals to its mouth. It sits up to eat, and is extremely fond of sweet things; but still more of strong liquors, with which, when it has an opportunity, it will get completely intoxicated. It has all the cunning of the fox, is very destructive to poultry, and will eat all sorts of grain, fruits, roots. It delights in hunting spiders, devours all kinds of insects, and, when left to range in a garden, will eat grass-hoppers, snails, and worms. It opens oysters with amazing dexterity, and has a peculiar method of dipping in water every thing it intends to eat. Indeed, it will seldom taste bread unless it be well soaked. It is familiar and caressing, and leaps upon those it is fond of, moving with great agility.

A French gentleman had, at one time, a racoon, of which the following particulars are related: When confined by a chain he always appeared gentle, but had little inclination to fondness: when liberated, however, he used to express his gratitude by a variety of little caresses. It sometimes happened that his chain broke, in which case liberty rendered him insolent, as he would roam about for three or four days together upon the tops of the neighbouring houses, descend, during the night, into the hen roosts, and eat the heads of all the poultry, having previously strangled them. It was also with great difficulty that he could again be caught and reconciled to bondage.

He possessed a strong recollection of ill-treatment, and he could never be brought to forgive: a servant, one day, gave him several lashes with a whip; but ever afterwards endeavoured in vain to effect a reconciliation. At the approach of this servant, the animal always exhibited symptoms of rage, and endeavoured to spring at his enemy, uttering the most doleful cries, and obstinately rejecting even the most favourite food, till the object of his aversion quitted the room. He appeared to dislike noise; as he was always irritated by the crying of children, and frequently inflicted a severe chastisement on a favourite little bitch, when she barked too loud.

The head of the racoon resembles that of a fox, its body is thick and short, covered with long hair, black at the ends, but grey underneath. Its tail is long and bushy, and marked with alternate rings of black and white: its skin is the most valuable part of this animal, and is reckoned next to the beaver for the manufacture of hats.

THE SAGOINS. (*Plate* 25.)

THESE are animals of the new world; they have no cheek pouches, no callosities on their buttocks, and have more of the shape of a cat than of an ape, whence, in some countries, they have got the name of sea cats, or rather transmarine cats, as coming from America by sea. They have the tail very long and covered with hairs, at least the greater part, for there are different species of them. This tail serves for suspending themselves to the branches of trees, and for keeping themselves firm; as also for swinging themselves, and going from one branch to another, or from one tree to another. They can even, with the extremity of this tail, seize fruits and carry them to their mouth, as with a hand. They likewise use it for catching fish, for they dive well, and are excellent fishers.

The most part of these animals are knavish, malicious, impudent; they defend themselves boldly against huntsmen and even insult individuals who only pass under the trees on which they are, both by throwing their excrements at them, or pieces of wood which they break off, and by throwing themselves nimbly down and leaping in people's faces. When one of them is wounded, all the rest run about it, examine the wound, and keep it together till such time as they form a ball of mashed leaves, with which they plug up the hole. Apes do the same.

The sagoin has the hair of a blackish grey, and a hideous aspect. It is the size of a fox, its tail is very long, but bare beneath for the one half of its length serves it for playing a thousand tricks. It has no thumbs on the fore hands, and hence it has obtained the name of tetradactyle. The sagoins go in troops of several hundreds together, and are extremely alert in leaping from one tree to another, by means of their tail. When the tree is too distant for a single one to reach it, several of them suspend themselves to one another's tails, and form a chain which swings till the one at the extremity gets a hold of a branch of the tree. In this manner, they likewise cross small rivers.

THE BERBE. (*Plate* 25.)

The berbe (called by the Europeans Winebibber, because it is very greedy of Palm-wine) is much like a Cat, only his snout is much sharper, and the body smaller, and spotted like the Civet-Cat.

THE OTTER. (*Plate* 26.)

May be said to constitute the first step of this gradation between terrestrial and aquatic animals, the former of which it resembles in exterior appearance and internal conformation, and the latter in its ability to swim, as well as in its habit, and mode of subsistence. The usual length of the otter is about two feet from the tip of the nose to the insertion of the tail, the head and nose are broad and flat: the mouth is formed like that of a fish: the neck is thick and short, the eyes are small, the tail is long, broad near the body, and gradually tapering to the point: the legs are short, but the joints are extremely pliant. The fur of this animal is of a deep brown, with two small spots on each side of the nose and another under the chin.

The otter destroys great quantities of fish, of which it is remarkably fond, and which indeed constitutes its principal food. In pursuing its prey it commonly swims against the current.

Otters are often taken in traps; and the hunting of them is with some a favourite diversion; the old otter will in this case defend itself against the dogs to the last extremity. They bite keenly, and it is not easy to make them quit their hold. An old otter will never leave his hold but with the loss of life, nor ever make any complaint for the severest wounds.

When taken young, these animals may be easily tamed and many instances of the fact have been witnessed. Being accustomed in youth to obedience and restraint, they become perfectly domesticated, follow their masters, and employ for his service, their talents in fishing.

A person who lived near Inverness procured a young otter, which he brought up tame: it would follow him any where, and when called by its name was always obedient. When apprehensive of danger from dogs, it always sought his protection, and would fly into his arms for safety. It was frequently employed in fishing, and sometimes caught seven or eight salmon in a day. When tired it always re-

Plate 26

Otter

Beaver

fused to fish any longer, and then was rewarded with as much fish as it could eat. When its hunger was satisfied, it always curled itself up quite round, and fell asleep, in which state it was generally carried home. This animal fished in the sea as well as in a river, and often took great numbers of codlings and other fish. Its food was generally fresh fish, it was also very fond of milk. It is indeed remarkable that notwithstanding the otter's avidity for fish, it will not eat it unless it be quite fresh. When it cannot be had in that state, these animals, if kept tame, must be fed with milk, pudding, &c.

We are told, by Mr. Bewick, of another person who kept a tame otter, which used to follow him with his dogs. It was very useful to him in fishing, by going into the water and driving trouts and other fish towards the net. It is worthy of remark, that the dogs, although accustomed to the sport of otter-hunting, were so far from offering it the least molestation, that they would not even hurt an otter when it was in their company, a striking instance of the power of habit in the modification of animal instinct.

Otters are, with some variation, found in most countries. In the marshes of Guiana they are very numerous; they herd together near the banks of the rivers, and are so fierce that it is not safe to approach them. Those of Cayenne are very large, weighing from ninety to a hundred pounds; they are of a dark brown colour, and their fur is fine, soft, and short. This animal is also found in North America, where it is called the minx, and is generally of a less size than in these countries, being only about twenty inches in length; but its fur is glossy and beautiful, and of a dark brown colour.

The small otter of Poland, and the north of Europe, is much less than the common kind. Its colour is a dusky brown; its fur, however, is very valuable, being in beauty esteemed next to that of the sable. Indeed the fur of all this tribe of animals is more or less valuable, so that although nature has assigned their abode in the solitary recesses of deep rivers and extensive morasses, they are still subservient to the use of man.

THE BEAVER. (*Plate 26.*)

We cannot but behold with wonder the common operation of instinct in the brute creation, and view with admiration the docility of the horse, the attachment of the dog, and the sagacity of the elephant; but when we observe a race of animals forming themselves into communities, building houses, and laying down plans of economy, and systematic projects for preservation and defence, we are struck with astonishment, and are ready to conclude that providence has endowed them with a portion of that reason, which had hitherto been considered as the prerogative of ambitious man.

When a great work is to be effected, the beavers to the amount of two or three hundred, assemble in June or July. They come from every corner, and meet nearly at the same time and in the same place, which is always near waters, and generally by the side of a rivulet. Here they work and begin to build a bank across the stream, that they may collect the water into a pond, which shall remain always level. They cut down such a tree as will fall into the water, this is often thicker than a man's body, it is cut through with their teeth in a very short time, and is so managed, that it falls across the stream transversly. They then lop off the branches and make use of them to assist their farther operations. Smaller trees, from the thickness of a man's leg to his thigh, are now cut down and dressed into stakes. These they drag to the stream and transport by water to their dam. They manage to elevate them and sink them in the ground. They are disposed in several rows, which are wattled together with pliant twigs, and the interstices filled with earth and clay beaten firm with their tails. This dam-dyke is from eighty to a hundred feet long. At the bottom, it is ten or twelve feet thick, it is perpendicular on the lower side, but slopes on the side next the water, so that the top is reduced to two or three feet. In the top also are constructed holes for the escape of the surface water. Having collected a pool, they now set about building houses and erecting a village. Their houses are built within the margin of the pool, and have two doors, that they may have access equally with the land and water. They are erected on strong piles, and rise from three or four, to eight or ten feet above the water; they are of a round or oval shape; they are arched, and form a dome at the top, and the whole is neatly plaistered without and within From one to ten or twelve pair inhabit a cabin, and these are always in proportion; they have proportionally strong walls, and they sometimes have three or four stories. A village sometimes contains twenty-five cabins, though generally it is composed of ten or twelve. Every cabin has a pot belonging to it in the water for winter provisions, which consists of bark and the branches of trees, and is common to every individual of a family, but is never encroached, upon by those of another. Such is the society of beavers, an exhibition of intellect that confuses the definitions of reason and instinct. Nothing is more admirable than their industry, but the union that directs it. While some gnawing. cut round the tree as neat as a wood-cutter, others roll it along to the water. While some dive and scrape holes with their feet, others support the beams and push them home. While some bring twigs, others collect stones and clay. While some beat and temper mortar, others carry it off on their flat tails, and beat it between the piles, or plaister their houses. But while every one does all that his fellows can expect for the completion of the grand work. when this is effected, they have done their utmost. Society, which advances man in knowledge and in arts, makes no improvement on them. They were perfected by nature for their work, their first efforts were compleat, and in the society that they form, they are, in point of intellect, merely stationary. Besides these social beavers, there are a solitary kind called Terriers, that live like the badger in holes, and lay up their winter provisions. This is the only kind that are found in Europe. It is only in northern regions that they form societies, and the most northerly beavers have the blackest and finest fur. In the north of Canada, they are of a chesnut brown, and farther south of a light straw colour. In 1763, the Hudson's Bay Company sold no fewer than 54,670 skins; and in North America, the beaver fur, which is the foundation of the hat manufactory, still occasions a great trade, though it is said the number of beavers is greatly diminished. The fur is best in winter. The beaver swims under the ice, and is caught in nets placed at the mouth of the hole, where he is soon obliged to come for respiration. His flesh is good eating, but owing to the practice of sitting constantly in shallow water, his hinder parts are fishy. His tail is covered with scales. His length, from the nose to the tail, is about three feet, his tail one.

THE DOG. (*Plate* 26.)

INDEPENDENT of his beauty, vivacity, strength, and swiftness, has all the interior qualities which can attract the regard of man. The tame dog comes crawling, to lay at his master's feet his courage, strength, and talents, and waits his orders to use them. He consults, interrogates, and beseeches. A glance of his eye is sufficient; he understands the signs of his will. Without the vices of man, he has all the ardour of sentiment; and, what is more, he has fidelity and constancy in his affections. He has no ambition, no interest, no desire of revenge, no fear but that of displeasing his master. He is all zeal, all warmth, and all obedience. More sensible of benefits than wrongs, he soon forgets, or only remembers them to make his attachment the stronger. Far from running away, he licks the hand which is the cause of his pain, he only opposes it by his cries, and at length entirely disarms it by his patience and submission.

More docile and flexible than any other animal, the dog is not only instructed in a short time, but he even conforms himself to the motions, manners, and habits of those who command him. He has all the manners of the house where he inhabits. Like other domestics, he is always attentive to his master; and striving to anticipate the wants of his friends, he gives no attention to indifferent people. When the care of the house is intrusted to him during the night, he becomes sometimes ferocious. He watches, he walks his rounds, he scents strangers afar off; and if they happen to stop, or attempt to break in, he flies to oppose them, and by reiterated barkings, efforts, and cries of passion, he gives the alarm. As furious against men of prey as against devouring animals, he flies upon, wounds, and tears them, and takes from them what they were endeavouring to steal; but, content with having conquered, he rests himself on the spoils, will not touch them even to satisfy his appetite, and at once gives an example of courage, temperance, and fidelity.

Thus we may see, of what importance this species is in the order of nature. Without the assistance of the dog, how could man have been able to tame, and reduce to slavery, other animals? How could he have discovered, hunted and destroyed, wild and noxious creatures? To keep himself in safety, and to render himself master of the living universe, it was necessary to begin by making himself friends among animals, in order to oppose them to others. The first art, then, of mankind, was the education of dogs, and the fruit of this art was the conquest and peaceable possession of the earth.

Of all animals, the Dog seems most susceptible of change, and most easily modified by differance of climate, food, and education; not only the figure of his body but his faculties, habits, and dispositions, vary in a surprising manner. In the same country, one Dog differs greatly from another; and in different climates, the very species seems to be changed. Nothing appears constant in these animals but their internal conformation, which is alike in all; in every other respect, they are totally dissimilar. They vary in size, in figure, in the length of their nose and shape of their head, in the length and direction of the ears and tail, in the colour and quantity of the hair, &c. To enumerate the different kinds, or mark the discriminations by which each is distinguished, would be a task as fruitless as it would be impossible. I have already observed, that those animals which have been long under human management. never preserve the stamp of nature in its original purity like those which enjoy their original independence: as the dog is the constant attendant on man, accompanies him into different climates, and in his society adopts more different modes of living than any other creature, it is not a matter of wonder that this animal should exhibit a greater variety than any other; and that the influences of so many different circumstances, with the incessant intermixture of breeds, should preclude every possibility of systematic arrangement. I shall therefore content myself with pointing out some of the most striking varieties.

THE SHEPHERDS DOG,

Is generally considered as the parent stock of the canine race. This faithful animal, ever attentive to his charge, reigns over the flock; and is of the utmost importance in many parts of this country, where extensive tracts of land are solely appropriated to the feeding of sheep and other cattle. This sagacious animal is so obedient to the voice of the shepherd, and so ready to execute his commands; that in conducting the flock from one place to another, and preventing the sheep from stragging, the services of one well-trained dog will be more effectual than all that could be performed by two or three men, without mentioning the attentive fidelity with which, in his masters's absence, he executes his office of a guardian.

THE CUR DOG,

ALTHOUGH not considered by naturalists as a distinct race, is, notwithstanding, esteemed such in some parts of this country; and its utility to the farmer and grazier is so great, that in many places no small attention is paid to the breed. They are extremely useful in driving cattle, and exceed the shepherd's dog in size, fierceness and strength. Some dogs of this kind possess an astonishing degree of sagacity: they know their master's fields, are attentive to the cattle that are in them, go of their own accord their daily rounds, and if any interlopers have got among the herd, will quickly drive them out of the grounds. They are larger, stronger, and fiercer, than the shepherd's dog; and their hair is smoother and shorter. They are mostly of a black and white colour. Their ears are half-pricked; and many of them are whelped with short tails, which seem as if they had been cut: These are called Self-Tailed Dogs.

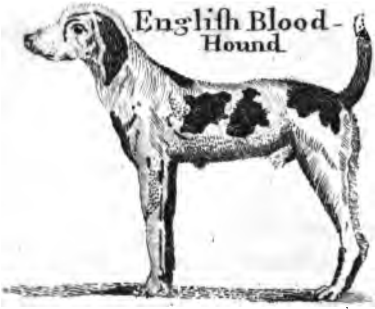
THE BLOOD HOUND,

Was in great request with our ancestors; and as it was remarkable for the fineness of its scent, it was frequently employed in recovering game that had escaped wounded from the hunter. It could follow, with great certainty, the footsteps of a man to a considerable distance; and in barbarous and uncivilized times, when the thief or murderer had fled, this useful creature would trace him through the most secret and thickest coverts, nor would it cease its pursuits till it had taken the felon; for this reason there was a law made in Scotland, that whoever denied entrance to one of these dogs, in pursuit of stolen goods, should be deemed an accessary. But, as the arm of Justice is now extended over every part of the country, and there are no secret recesses where villainy may lay concealed, these services are no longer necessary. In Scotland it was distinguished by the name of the Sleuth Hound.

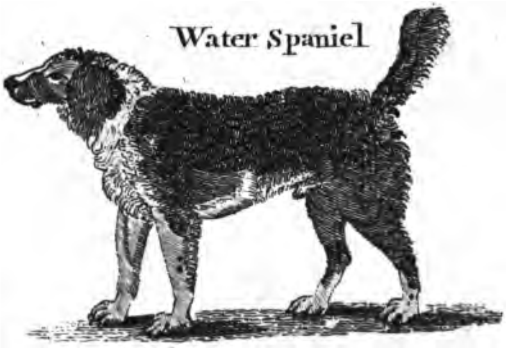
Some few of these Dogs are still kept in the southern part of the Kingdom, and are used in the pursuit of Deer that have been previously wouded by a shot to draw blood, the scent of which enable them to pursue with most unerring steadiness.—They are also employed in discovering Deer-stealers; whom they infallibly trace by the blood that issues from the wounds of their victims.

The Blood-hound is taller than the Old English Hound, most beautifully formed, and superior to every other kind in activity, speed, and sagacity. They seldom bark, except in the chase; and are commonly of a reddish or brown colour.

Plate 27

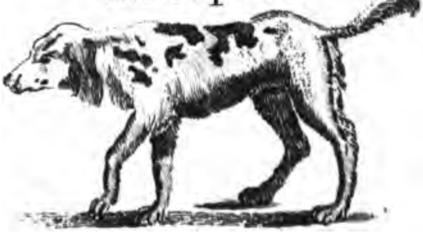


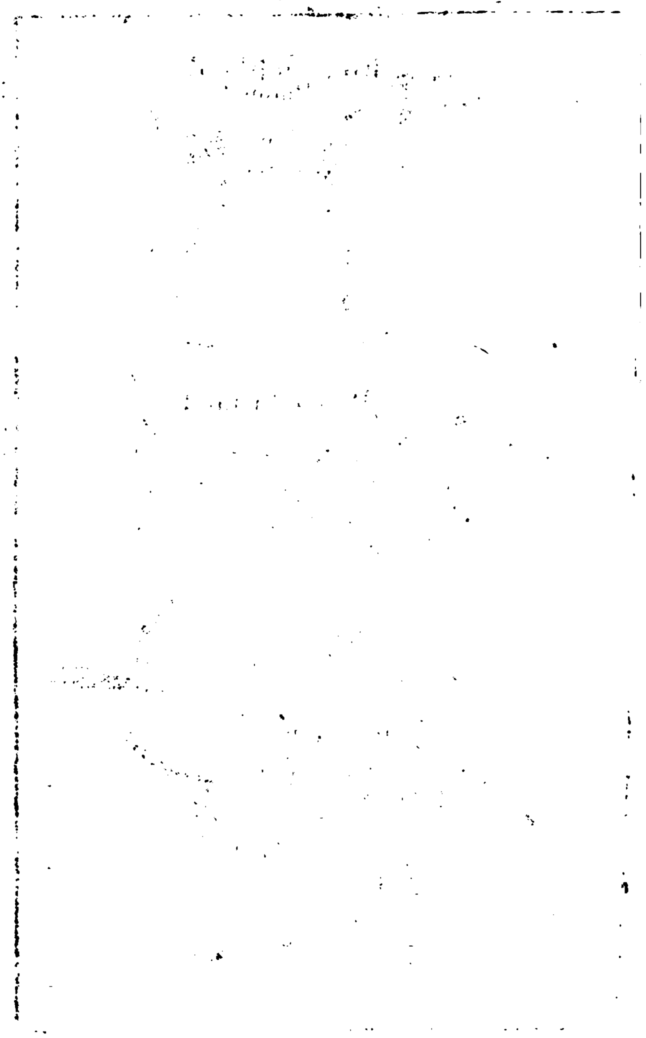
Engliſh Blood-Hound



Water Spaniel

Land Spaniel





THE FOX HOUND.

GREAT Britain excels all other countries in her breed of fox-hounds, whether we consider their swiftness, or their perseverance. The climate seems congenial to their nature for the race is said to degenerate when transplanted into foreign countries; and it is certain that in no part of the world is there so much attention paid to their breeding and management. This, indeed, is not a matter of wonder, when we consider that the attachment of the English to the chase is so remarkable, as to be reckoned a trait of the national character. This propensity is so prevalent, that scarcely any price is thought too high for hounds of approved excellence.

These dogs are also trained to hunt the stag; and as a proof of their perseverance and spirit in supporting a long continuance of vigorous exertion, it is sufficient to observe, that a large stag having been turned out of Whinfield park, in Westmoreland, was pursued until the whole pack was thrown out, except two staunch dogs, which continued the chase. The stag returned to the park, made his last efforts in leaping over the wall, and at the moment he had accomplished it, dropped down dead. The foremost of the two hounds also reached the wall, but being too much exhausted, it lay down and immediately expired: the other, unable any longer to continue the pursuit, fell down dead within a small distance of the place. This is perhaps the longest chase recorded in the annals of stag-hunting. They advanced as far as Red-kirk, near Annan, in Scotland, distant from Whinfield park forty-six miles by the post-road, so that the circuitous route they might be supposed to take could scarcely be less than a hundred and twenty miles. The horns of this stag, which were the largest ever seen in that part of the country, were affixed to a large tree in the park, in commemoration of this extraordinary chace.

THE IRISH WOLF DOG.

Is the largest of the canine species, and its appearance the most beautiful and majestic. It was peculiar to Ireland, but is now almost extinct. This was, according to Buffon, the famous Wolossian dog of antiquity.

Wolves are no longer to be met with in Ireland; and this kind of dog is unserviceable for hunting either the stag, the fox, or the hare; we need not there be at a loss to discover the cause of the breed being neglected: it would, however, be worth preserving, as it is a beautiful animal, its aspect mild, and its disposition gentle. Although it never seeks to quarrel with any other dogs, it is far superior in combat both to the bull dog and the mastiff.

THE BEAGLE.

Is the smallest of all the dogs kept for the chace, and is used only in hunting the hare. It is far inferior in speed to that animal, which is the principal object of its pursuit: but by its exquisite scent it traces her footsteps through all her turnings and windings with the greatest exactness, and with wonderful perseverance, until she becomes at length exhausted, and unable any longer to continue her flight.

THE HARRIER.

Differs from the beagle in being somewhat larger, as also more nimble and vigorous. It pursuing the hare with eager impetuosity, and scarcely gives her any time to breathe; and the most active sportsman finds it sufficient exercise to keep up with the pack. These hounds exert their voices with cheerfulness, and make that lively harmony which has ever delighted the ears of the true sportsman.

THE LARGE WATER SPANIEL,

Is chiefly used in discovering the haunts of wild ducks, and other water fowl; it is fond of the water, and swims well. In its disposition it is docile and obedient; its form is elegant; its hair beautifully curled; its ears are long, and its aspect is sagacious and pleasing. These dogs are extremely useful in finding birds that have been shot, or disabled, and fetching them out from places which the sportsman cannot conveniently approach. The small water spaniel is of a less size, but resembles the other in form, and is of similar habits and disposition.

THE ROUGH WATER DOG.

Admits of two varieties, one of a larger, and the other of a smaller size: but they are both remarkable for their long shaggy hair, and their aptness to fetch any thing, especially out of the water. They are web-footed, and swim, with great ease; they are fond of water, and are extremely useful in hunting ducks, and other aquatic fowl.

THE LAND SPANIEL (*Plate* 27.)

This is a handsome and active dog; its use and qualities are well known. Its scent is exquisite, and its sagacity in discovering the various kinds of game, with its caution in approaching them, exhibits a wonderful specimen of animal instinct.

THE SPRINGER OR COCKER.

Is an indefatigable pursuer of its game, and exceedingly active and expert in raising woodcocks and snipes from their haunts in the woods and marshes which they frequent.

Of this kind also seems to be that handsome little animal, known by the appe'lation of King Charles's dog, the favourite companion of that monarch, who is said to have been generally attended by several of that kind.

Somewhat similar to this, but much smaller, is the shock dog, a diminutive creature, almost lost in the great quantity of hair, which covers it from head to foot.

THE SPANISH POINTER

Is of foreign origin, as its name seems to imply; but it is now naturalized in this country, which has long been famous for Dogs of this kind; the greatest attention being paid to preserve the breed in its utmost purity.

This Dog is remarkable for the aptness and facility with which it receives instruction: It may be said to be almost self-taught; whilst the English Pointer requires the greatest care and attention in breaking and training to the sport. The Spanish Pointer, however, is not so durable and hardy nor so able to undergo the fatigues of an extensive range It is chiefly employed in finding partridges, pheasants, &c. either for the gun or the net.

It is said, that an English nobleman (Robert Dudley, duke of Northumberland) was the first that broke a Setting-Dog to the net.

THE NEWFOUNDLAND DOG.

Is one of the largest, as well as the most sagacious and useful animals of the canine race. The dimensions of one now or lately kept at Eslington, in Northumberland, the seat of Sir H. G. Liddell, Bart. were, according to Mr. Bewick, as follows; from the nose to the end of the tail, six feet two inches; the length of the tail, one foot ten inches; from one fore foot over the shoulders to the other, five feet seven inches; girt behind the shou'ders, three feet two inches; and round the upper part of the fore leg, nine inches and a half. It was very fond of fish, and would eat it raw out of the nets. It was web-footed, could swim and dive extremely well, and bring up any thing from the bottom of the water. The extraordinary sagacity of these dogs, joined to their attachment to their masters, renders them, in certain situations, highly valuable, as will appear from the two following well authenticated anecdotes.

A ship belonging to Newcastle, being wrecked near Yarmouth in a severe storm A. D. 1789, and all the crew lost a Newfoundland dog alone escaped to land, bringing the captain's pocket-book in his mouth. He landed amidst a crowd of people, many of whom, in vain, endeavoured to take it from him. The sagacious animal, as if sensible of the importance of the charge, which had probably been delivered to him by his perishing master, at length leaped fawningly against the breast of a man who had attracted his notice among the crowd, and delivered to him the book. The dog immediately returned to the beach, and watched with great attention for every thing that came a-shore from the wrecked vessel, seizing every thing that came up, and endeavouring to bring it safe to land.

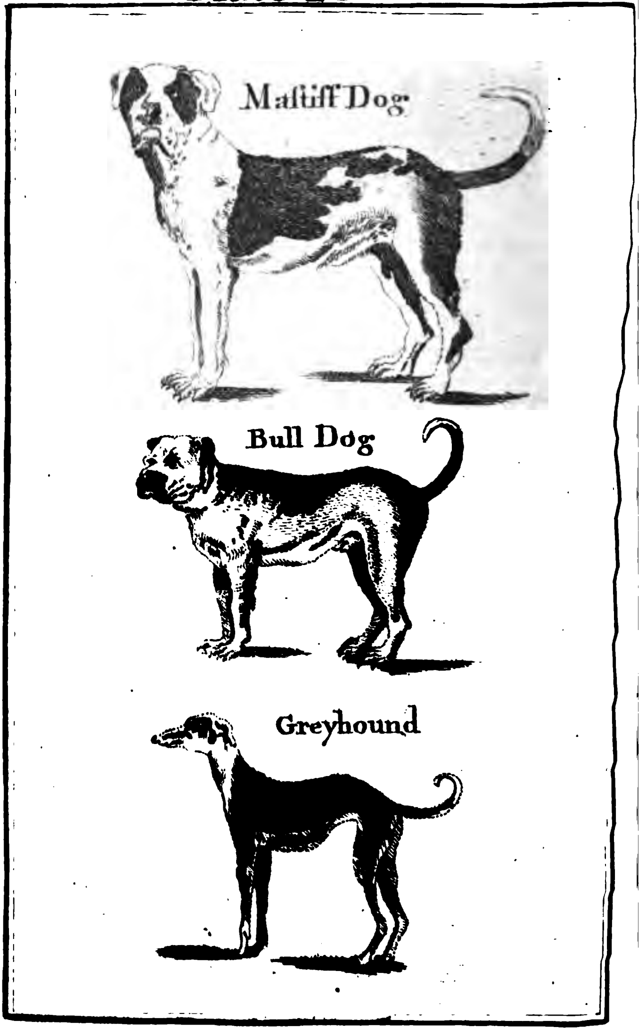
As another instance of the docility and sagacity of these animals, Mr. Bewick relates, that a gentleman walking by the side of the river Tyne, and observed on the opposite side a child fall into the water, gave notice to his dog, which immediately jumped in swam over, and catching hold of the child with his mouth, brought it safe to land.

In the country from whence these dogs originally were brought, and from which they derive their name, they are extremely useful. Three or four of them yoked to a sledge, will draw for several miles two or three hundred weight of wood, without any driver or conductor, and after delivering their loads, regularly return. The Newfoundland dog is indeed a most valuable creature, and we cannot contemplate his astonishing sagacity without admiring the wonderful works of the Creator, displayed in the various modifications of animal instinct.

THE GREENLAND DOG.

The savage aspect and disposition of this Dog seem to bear some affinity to the rigours of the climate it inhabits. The Pomeranian or Wolf Dog of M. Buffon, the Siberian,

Plate 28



apland, and Iceland Dogs are somewhat similar to it in e sharpness of their muzzles, in their long shaggy hair, and ushy curling tails. The principal differance is in their size. hough much larger, they all of them have some resembance to the Shepherd's Dog.

Most of the Greenland Dogs are white; but some are potted, and some black. They may rather be said to howl han bark. The Greenlanders sometimes eat their flesh: They make garments of their skins, and use them in drawing sledges; to which they yoke them, four, five, and sometimes six together.

The Dogs of Kamschatka are commonly black or white. They are strong, nimble, and active; and are very useful in drawing sledges, the only method of travelling in that dreary country during the winter. They travel with great expedition. Captain King relates, that, during his stay their. a courier with dispatches, drawn by them, performed a journey of 270 miles in less than four days. The sledges are usually drawn by five Dogs, four of them yoked two and two abreast; The reins being fastened to a collar round the leading Dog's neck, are of little use in directing the pack; the driver depending chiefly upon their obedience to his voice, with which he animates them to proceed. Great care and attention are consequently used in training up those for leaders, which are more valuable according to their steadiness and docility; the sum of forty roubles, or ten pounds being no unusual price for one of them.—The rider has a crooked stick, answering the purpose both of whip and reins; with which, by striking on the snow, he regulates the speed of the Dogs, or stops them at his pleasure. When they are inattentive to their duty, he often chastises them by throwing it at them. He discovers great dexterity in regaining his stick, which is the greatest difficulty attending his situation; for if he should happen to lose his stick, the Dogs immediately discover the circumstance, and seldom fail to set off at full speed, and continue to run till their strength is exhausted, or till the carriage is overturned, and dashed to pieces, or hurried down a precipice.

THE MASTIFF. (*Plate 26*)

The real mastiff is much larger and stronger than the bull dog. His ears are pendulous, his lips large and loose, his aspect sullen, and his bark loud and terrific. The distinguishing characteristic of his disposition is that of being faithful guardian of property, and suffering no depredati to be committed on the premises where he resides. D Caius, who wrote in the reign of Queen Elizabeth, infor us, that three of these dogs were reckoned a match for bear, and four for a lion; but from an experiment made the presence of King James the First, it appeared that a li was not an equal match for three of them; for although t of the dogs were disabled in the conflicts, the third seiz the lion by the lip, and held him for some time, until, being dreadfully torn by his claws, he was obliged to let go h hold; and the lion, exhausted by the contest, took a sudden leap over the dogs, and retired to his den. Experiments, however, of this kind, cannot give us any just notion of the proportion of courage and strength between those animals; for it must be considered that the lion in question, besides having lost much of his natural ferocity by the temperature of the climate, had long been in a state of confinement under the subjection of man. It is therefore impossible to ascertain how many mastiffs would be a match for that undaunted animal in his state of natural fierceness, under the burning influence of an African sun in the deserts of Biledulgerid.

THE BULL DOG (*Plate* 28.)

Is probably the most courageous animal that nature has produced. It is not so large as many other kinds of dogs, but very strong and muscular. Its nose is short, and its aspect fierce. Its courage in attacking the bull is well known, and to the disgrace of humanity has been too often put to the trial. The persevering resolution and ardour of these dogs, is exhibited in an instance which happened some years ago at a bull-baiting in the north of England: a person, confident of the courage of his dog, laid some trifling wager, that he would, at seperate times, cut off its four feet, and that, after every amputation, it would attack the bull. The barbarous experiment was tried, and the dog continued to seize the bull in the same manner as if he had been perfectly whole, exhibiting at the same time a striking example of his ferocious courage, and of the barbarity of his unfeeling owner.

The number of this species of dogs is very much diminished, and its total extinction would be a desirable circumstance; for as it always makes its attacks without barking, It is a very dangerous animal, and ought never to be approached by strangers without great caution. However, as the barbarous diversion of bull-baiting is now almost entirely laid aside, the breed of bull dogs will be little attended to, and probably will be soon lost in the confusion of intermixtures.

THE GREYHOUND. *(Plate 28.)*

The Greyhound is the fleetest of all Dogs, and can outrun every animal of the chase; but as it wants the faculty of scenting, it only follows by the eye. It was formerly held in such estimation, as to be considered the peculiar companion of Gentlemen; and, by the forest laws of King Canute, it was enacted, that no person under that degree should presume to keep a Greyhound.

The small Italian Greyhound is not above half the size, but perfectly similiar in form. Its shape is exquisitely beautiful and delicate.—It is not common in this country. the climate being too rigorous for the extreme delicacy of its constitution.

THE TERRIER.

Has a most acute smell, is generally an attendant on every pack of Hounds, and is very expert in forcing foxes or other game out of their coverts. It is the determined enemy of all the vermin kind; such as Weasels, Foumarts, Badgers, Rats, Mice, &c. It is fierce, keen, and hardy; and, in its encounters with the Badger, sometimes meets with very severe treatment, which it sustains with great courage and fortitude; and a well-trained veteran Dog frequently proves more than a match for that hard-biting animal.

There are two kinds of Terriers,—the one rough, short legged, long-backed, very strong, and most commonly of a black or yellowish colour, mixed with white; the other is smooth, sleek, and beautifully formed, having a shorter body, and more sprightly appearance: It is generally of a reddish-brown colour, or black, with tanned legs; and is similiar to the rough Terrier in disposition and faculties, but inferior in size, strength, and fierceness.

THE TURNSPIT

A vigilant and spirited little dog, is now but seldom employed, although its services were of great utility before the ingenuity of mechanical improvements rendered them unnecessary. Before the invention of a better method of working the spit, it was curious to observe the labours of this useful little animal.

It is generally long-bodied, has short crooked legs, its tail curled upon its back. It is peculiar in the colour of its eyes, the same dog often having the iris of one eye black, and the other white.

THE PUG DOG.

Is formed exactly in the same manner as they bull dog, but much smaller, and its tail curls upon its back. It was formerly very common in England, but now the breed begins to be scarce. Mrs. Piozzi informs us, that she saw great numbers of them at Padua, and that it still maintains its place in the favour of the ladies in that city.

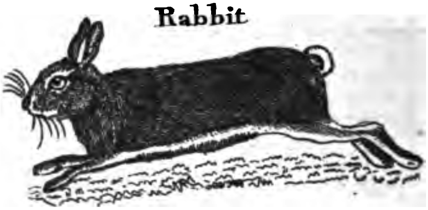
From the mixture of these, and other breeds, we have messets, lap-dogs, waps, dancers, mongrels, and an endless number of varieties and compounds.

There are several peculiarities common to all animals of the dog kind, mentioned by Linnæus, with which I shall conclude its history; the principal of which are as follows: the dog is carnivorous; its stomach digests bones; it eats grass for a vomit; voids its urine sideways, and commonly where other dogs have done before; smells at a stranger; scarcely ever sweats, but lolls out its tongue when hot; is subject to the hydrophobia; its sense of hearing very quick; when asleep, is apt to dream; goes with young sixty-three days, and commonly brings forth from four to eight at one time; howls at certain musical notes: when about to lie down, frequently goes round the place; is an enemy to beggars and ill-looking people, and attacks them without the least provocation; and is said to be sick at the approach of bad weather. I cannot, however, agree with the learned naturalist, when he asserts, that the male puppies resemble the dog, and the female the bitch; or that it is a character common to the whole species, that the tail always bends to the left side. To these we may add, as equally void of foundation, a remark of M. Buffon, that a female hound, covered with a dog of her own kind, has been known to produce a mixed race, consisting of hounds and terriers. I mentioned these to shew that too much caution cannot be used in forming general characters or systematic arrangements; and I leave it to the experience of the most inattentive observer to detect such palpable absurdities.

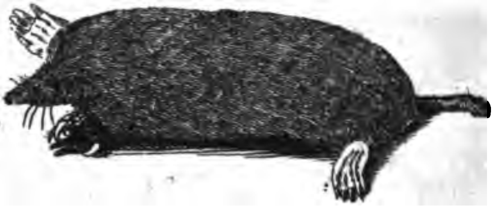
Plate 29

Hare

Rabbit



Mole



THE HARE. (*Plate* 29.)

It would appear from its prominent eyes, and its long flexible ears, that nature intended the hare to be constantly on its guard, and to live in a state of terror; and indeed, few animals have a greater number of enemies. They are the prey of the fox, the wolf, and of every rapacious quadruped. They produce an offspring for the owl, the buzzard and the eagle; they inhabit every region, and every where have new enemies; they are every where prolific, but seldom attain the natural period of their lives. Without ingenuity to protect their young, they are neither hidden in the ground, or in the crevices of the rock. Without arms or courage to defend themselves, the parent hares are unable to repel their feeblest foes. Their timidity suggests to them, that their safety is in flight. It occasionally, however, suggests recourses above the ordinary effort of their instinct. A hare has been known to start from its seat at the distant sound of the hunting horn, run to a pool, and swim to a bed of rushes in the middle of it, and lie down to avoid being chaced by dogs. A hare, after running two hours before dogs, will push another from its seat and take possession of it. After a chace, a hare will leap into a sheep fold and lie down among them, or it will run in among a flock of sheep and go along with them. Hares, from the shortness of their fore-legs, run awkwardly down hills; therefore, when pursued, they always take the ascent, they run along with the wind, and frequently return on their steps. Though the hare is timid and defenceless, is doomed to perpetual dangers in the field, it is not satisfied with the security of a domestic life, When taken young, it is easily tamed, it is gentle and caressing, but he takes the first opportunity of flying off and regaining its liberty. Hares never go far from the place of their birth. When the young separate from their mother, they make a form or seat at the distance of sixty or eighty paces. When hunted, they never remove to a great distance, and always return to their seat. Whatever number of hares may be in the neighbourhood, every one has a seat where it sits in solitude and silence. They sleep most part of the day, at night they have something like fellowship, and leap, gambol, and chace one another by moon-light, but the most accidental noise will alarm and separate them in an instant. Hares feed on herbs, leaves, and grain; they eat the bark of all young trees, excepting that of the alder and lime, and are fond of birch, parsley, and pinks. They acquire their growth in one year, and live seven. The female goes with young thirty days, and brings three or four at a time. The body of the hare is of a tawny colour above, and white beneath, the tail is black above, the throat and breast are red; the fur is of great use in the manufacture of hats.

THE RABBIT (*Plate* 29.)

Is an animal so common, and so well known in every part of this kingdom, that any description of its form would be superfluous; it may not, however, be amiss to observe, that although the tame kind assume a variety of colours, the wild are invariably brown.

Notwithstanding the general resemblance which exists between this animal and the hare, their habits and propensities are very different, as well as their fecundity, and several other distinguishing characteristics; and they also seem to have a natural aversion for each other.

The rabbit lives to the age of nine or ten years. It prefers a warm climate; and in Sweden, and other northern regions, it cannot be reared but in houses. It is common, however, in all the temperate countries of Europe. In Spain they had once become so numerous, and were found so destructive to vegetation, that the inhabitants were obliged to introduce ferrets from Africa, in order to diminish their numbers.

They abound in every part of Great Britain, especially in Cambridgeshire, Norfolk, Lincolnshire, and on the wolds of Yorkshire; but in many of these parts several warrens are lately converted into sheep pasture, or tillage, and the number of rabbits is consequently diminishing.

The fecundity of the rabbit is astonishing, and exhibits a curious article in the history of animated nature. This little quadruped breeds seven times in the year, and generally produces seven or eight young at a time; whence may be calculated the wonderful, and almost incredible increase of which a single pair might in a few years be capable; but as their propagation is rapid, their enemies also are numerous. Foxes, foumarts, and almost all animals of the weasel kind, make them their prey, without reckoning the immense numbers taken for the use of man. Indeed, if a considerable reduction did not by various means take place, there is every reason to believe that their numbers would exceed the means of support, and totally consume the whole vegetable produce of the country. In this animal, therefore, as well as in many others, we discover a striking display of the wisdom of the Creator, in so exactly proportioning the measure of fecundity and destruction.

The rabbit is not among the indigenous animals of America; but in many of the West-India islands there are great numbers which have originated from a stock carried thither from the old continent.

One striking dissimilarity between the habits of this quadruped, and those of the hare, to which, although inferior in size, it bears so visible a resemblance, is, that the former burrows in holes in the ground, while the latter depends on speed for its security. The flesh of the rabbit, as well as that of the hare, is esteemed unclean by the Jews, and the Mahometans, but is considered as a delicacy among Christians; and the fur of the one as well as of the other, constitutes a very considerable article in the manufacture of hats. The skins of the rabbits indeed, constitute no small part of the profits of those who keep warrens.

THE MOLE (*Plate* 29.)

The eyes of the Mole are so small, and so deeply hid in its fur, that it is not wonderful it has been reported to be blind. It is doubtful whether its eyes could be of much use in a rocky situation, where it could not burrow deep, and were frequently obliged to come abroad for food; but residing, as it constantly does, under the ground, and furnished with a strong sense of smell, to enable it to seek for roots and reptiles, the Mole, at least with us, entirely relinquishes the benefits of vision. It has, however, in its retreat, the entrance to which is always shut, a security beyond that of other animals. Effectually defended against the attack of every quadruped and bird of prey, it has no enimies but the persecuting ingenuity of man, and accidents that result from its own instinct; for it delights in the soft earth of meadows and low grounds, which abound with excellent roots, with insects, and with worms; but in these situations, so subject to be overflowed by inundations, vast numbers of them are destroyed. Indeed, Moles multiply so fast, that, were there numbers not constantly reduced, they would perhaps do more mischief below ground, by destroying the roots of plants, than is effected above by all the ravages of quadrupeds and birds. The nest in which they deposit their young is of a curious structure, and is erected in the largest of these hillocks we see in the fields. The hillock forms an arch in the inside, firmly bound with roots, and supported with pillars; below this arch is erected another hillock, upon the top of which the nest is constructed of herbs and leaves, and fitted to contain five or six young. It is above the surface of the ground, and cannot be affected by ordinary inundations. The internal hillock is perforated with holes, which go in all directions into the earth, and then again to the surface. Through these holes, the old ones seek for nourishment to their young, or carry them off on the least approach of danger. The Mole is usually black, and covered with hair closer and softer than the finest velvet. Its skin is so tough, that it can hardly be cut, and the forepart of its body is remarkably strong and muscular.

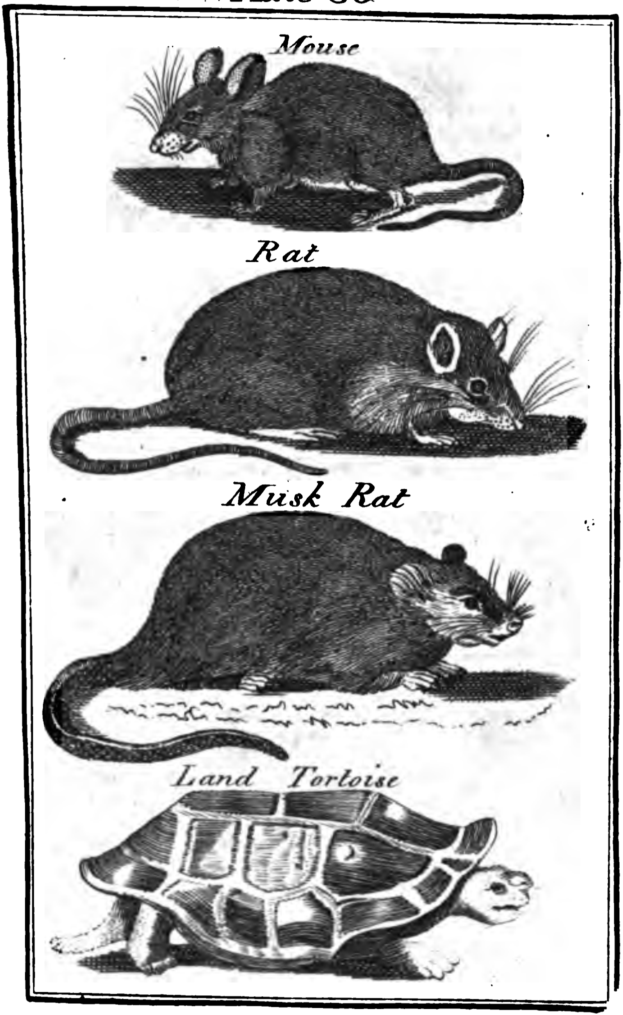
THE MOUSE, (*Plate* 30.)

Is a neat little lively animal, but is an object of antipathy to many; this must be occasioned by the mischief it does, and by its being domestic without being familiar. There is no debarring it from the cup-board, and its appearance is always sudden. Its motion is a race and a stop. It is easily frightened; before it be well seen, it is out of sight. Constantly expressing alarm itself, it communicates alarm to others. Its own terror is indeed well-founded, for it has many enemies. It is persecuted by traps, poison, and cats within doors, and in the fields, it is seized by owls and other birds of prey; by weasels, and even by rats. They multiply prodigiously, and are found in every quarter of the world. The dun colour of the mouse is frequently changed to white, its full bright eye has then a fine effect; and it is altogether a pretty little creature.

THE LONG TAILED FIELD MOUSE

Is only found in fields or gardens. They do much mischief in the country, where they have been known to dig up the new sown acorns, and not leave a single seed; they are, however, easily killed with flat stones, slightly supported by a stick, and baited with roasted walnuts, which they are very fond of. They form their nests in the ground not far from the surface, and amass great quantities of acorns, beech-mast and grain, for the winter. The body is of a yellowish colour, and about four inches long.

Plate 30



THE SHORT TAILED FIELD MOUSE

Does great damage in fields of corn, where it cuts the stalk, that it may come to the ears. It burrows in the ground and lays up store for the winter.

THE SHREW MOUSE

Is among the smallest of quadrupeds, and occupies a station between the rat and the mole. It is less than the mouse, but not so agile. It has the long snout of the mole, but its eyes, though small, are larger. It frequents hay-lofts, stables and dunghills, and feeds on corn, insects and putrid flesh. It has so disagreeable a smell, that though the cats kill, they do not eat it. It is of a brown colour, and is common over all Europe.

THE RAT. (*Plate* 39.)

If the Rat were large and strong in proportion to its ferocity, no animal were more formidable. It is an enemy to every living creature; and it wages war with its own species. In its turn it is opposed and made the prey of many enemies; but in spite of the ravages of the cat and the weasel, the snares and the poison of men, though the number of rats is in some places lessened, they are still very numerous, and they permit not the vigilence of the housewife or storekeeper to slumber. They are very destructive in barns and granaries of corn. In the dwelling-house, nothing is exempted from destruction; they gnaw linen-cloth and furniture; they lodge in the ceiling and panelling of the walls, where they drag every thing they can destroy, and form magazines for their young. They breed often in a year, and have six or seven at a time. When the young ones venture abroad, the mother watches them and defends them from the cat. With the instinctive courage that nature almost universally has imparted to a mother, she hazards a most unequal combat, and furiously maintains it that her offspring may escape. The rat is not otherwise courageous; it fights the weasel, who attacks it in its hole; but this, too, is the combat of despair, for though the weasel is the smallest animal, he is always victorious. This is owing to the structure of their jaws. The rat tears furiously with his foreteeth, and continues to inflict new wounds; but the weasel bites with his whole jaw; he rivets his teeth where he bites; he sucks the blood, and cannot be disengaged from his hold, till the death of the victim has completed his conquest. When provisions grow scarce, rats devour one another. The strong kill the weak; they open their heads and eat the brain, and afterwards the rest of the body; and this daily massacre is continued till by themselves they are nearly exterminated. This is a shocking scene; and yet it is but a picture in small, and simply exhibits the wreaks of conflicting nations among men, who very seldom can plead for their devastations, the pressing apology of rats. This cannibal conflict among the rats, accounts for their sudden disappearance from places where their numbers baffled every art to subdue them, and where their depredations drove the possessor from his habitation. They were transported to South America by the Europeans in 1544, and they are now the pest of all that continent. They swarm in the islands of the Indian ocean; and at Otaheite they will attack the inhabitants when they are asleep; who hold them in such abhorence, that they will not even kill them least they be polluted by their touch. They are of a deep iron grey colour, seven inches long, the tail near eight.

THE BROWN RAT.

As if the Black Rats were not sufficiently disagreeable neighbours, the Brown Rats made their appearance in Europe, for the first time, about the beginning of the 18th century. They are larger, stronger, bolder and more prolific than the Black Rat. Of a reddish brown colour, the body is nine inches long, the tail the same; when pursued, they will turn and bite the hand or stick that assails them. They produce from twelve to eighteen at a time. They burrow, like the water rat, in the sides of ponds and ditches. They swim and dive well, and take the water readily. They live on fruit and grain, but eat young hares and partridges. When they quit the fields in winter, they enter the hen-house, and, like the polecat, kill all the young birds; among straw and grain they do infinite mischief by choping much more than they devour. Neither common rats nor mice exist in their neighbourhood; but they themselves may be destroyed by ferrets, who attack them in their holes as furiously as they do the rabbit. They swarm in Petersburgh and Prussia. It is thought, that they were brought from India, where it is said, that they so undermine the foundation of houses, that they frequently fall.

THE WATER RAT

NEITHER enters the house nor the barn, but takes up its abode on the margin of pools and ditches, and feeds on small fish and fry, frogs and insects. Its toes are not connected by membranes, yet it swims admirably, and keeps long under water. Its colour is black, it has a thick blunt nose, and is about the size of the common rat. The peasants of France, during the time of lent, used to eat the water rat and the otter.

THE MUSK RAT (*Plate* 30)

Is said to be shaped like one of our water rats, but larger. It has a fine musky scent. It builds in the marshes, by the water-side, with two or three ways into them; and is finely daubed within, having three lodging-rooms, one higher than another. It is thought to live mostly on fish.

THE LAND TORTOISE. (*Plate* 30)

Is found from one to four or five feet in length, and from five to eighteen inches across the back. The head, which it can, at pleasure, protend beyond, or draw within the shell, resembles that of the serpent kind. The tail is long and scaly, and the exterior covering of the animal is composed of several pieces of shell joined together in the firmest and most compact manner, and somewhat resembling the tiling of a house.

This animal, which is of the most pacific disposition, is admirably armed for defence. It is also remarkable for longevity; and although it is difficult to ascertain the precise duration of its life, there is a well authenticated instance of one kept in the gardens of Lambeth Palace, which was known to have lived above a hundred and twenty years. The tortoise is, indeed so tenacious of life, that it cannot, without difficulty, be destroyed: it even, in some measure, seems calculated for immortality; for it is said that it retains the vital principle a considerable time after the loss of its brain, and even of its head. Experiments, shocking to humanity, have sometimes been made, in order to see how far this animal is capable of enduring pain; but I flatter myself, that you will agree with me, that all knowledge gained by so flagrant an offence against the Creator of the universe, as this infliction of torments on his unoffending creatures, had better for ever remain concealed.

THE OPPOSSUM.

The most curious circumstance in the history of this animal is, that the female has a large pouch under her belly, in which she receives and nourishes her young. This pouch contains her teats; and the young, as soon as they are brought forth, take shelter here, and adhere so closely that they cannot be easily seperated. They abide in this new receptacle till they have acquired some strength, being at first very small, weak, and blind. The mother, who can open and shut the pouch at pleasure, then allows to go out in quest of food, and receives them back on the appearance of danger, or when she means to transport them to another place. She has five or six at a time. This Oppossum has a round body, covered with dirty and dusky hair. The *legs* are short. A small part of the tail is hairy; the remainder is covered with small scales, and possesses the prehensile power of some of the monkeys. With this it hangs *from* the branch of a tree, and reaches its fruit, or by swinging it throws itself from one tree to another. It hunts eagerly after birds, and their nests, and is also very destructive to poultry. It borrow in the ground, and is found in Mexico, and South America.

THE KANGUROO

Inhabits the western part of New Holland. The fore legs of this animal, which are very short, are rendered *useless* for walking from the length and strength of the hind legs, which are nearly as long as its body; it, therefore, goes entirely on its hind legs, and its motion is performed by *leaps*. In this manner it springs from rock to rock, and progressively over bushes seven or eight feet high. When it is in motion, it carries its tail at right angles with its body, and when it alights, looks often back. It is very timid at the sight of men: it leaps from them with amazing velocity, and is much too swift for grey hounds. It lurks in long grass, and feeds on vegetables. From the nose to the tail, it is about three feet; the tail is about three feet nine. It is dun-coloured, good eating, and weighs eighty or ninety pounds.

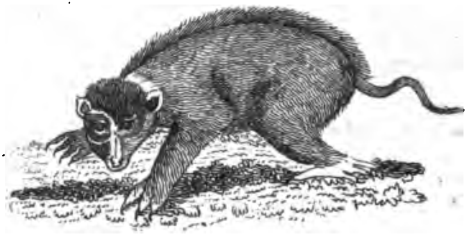
THE POTTO OR SLOTH. (*Plate* 31.)

Which is eaten and eagerly sought for, both by rapacious animals and men, makes not the smallest resistance; and *is* so much otherwise exposed by its extraordinary sluggish movements, that it is wonderful the race should subsist.

Plate 31

Opoſsum

Potto



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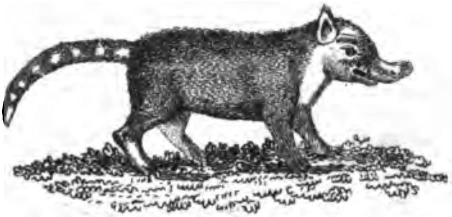

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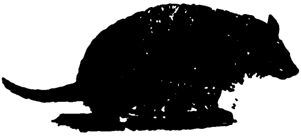


ts strong and stiff legs are furnished with long claws, which arely enable it to climb trees at the rate of twelve feet in he hour. It remains on the tree for several weeks, and loes not leave it till it has devoured all the leaves, the fruit, and the twigs. Whether it has not the power of descending, or whether it would take too much time, when the tree is bare, it allows itself to tumble from the top, like an inanimated mass, upon the ground; it then feeds upon what may have fallen from the tree; but before it can reach another, so slowly it stretches out its foot, and so tediously it trails its body on the ground, that days are sometimes consumed in the rout, and it suffers an excess of hunger.

Its insensibility, however, is extreme; for it shrinks not from blows, and no whipping can make it increase its pace. It is this want of sensibility that renders it defenceless, rather than the want of arms; for a Sloth that had seized a dog, held him fast with his feet for four days, so that he perished with hunger. It usually hangs from a branch suspended by the claws. In this situation it both eats and sleeps. The Sloth inhabits South America.

THE COATI MONDI (*Plate* 31)

Is an animal of Brazil, having a snout of about a foot long; which is much bigger in proportion than any other part of his body. His eyes are like a pigs, and his ears like those of a rat. The fore-feet have each five toes; those of the fore-paws are longer than those of the hinder. Its hair is short, rough, knotty, and black on the back; the rest of the body is a mixture of black and red.

THE TATUS OR ARMADILLO (*Plate* 31)

Is found only in South-America, where there are several varieties of them. They are all covered with a strong crust or shell, and are distinguished from each other by the number of the flexible bands of which it is composed.—It is a harmless, inoffensive animal; feeds on roots, fruits, and other vegetables; grows very fat; and is greatly esteemed for the delicacy of its flesh.——The Indians hunt it with small dogs trained for that purpose —When surprised, it runs to its hole, or attempts to make a new one, which it does with great expedition, having strong claws on its fore feet, with which it adheres so firmly to the ground, that, if it should be caught by the tail whilst making its way into the earth, its resistance is so great, that it will sometimes leave it in the hands of its pursuers: To avoid this, the hunter has recourse to artifice; and, by tickling it with a stick, it gives up its hold, and suffers itself to be taken alive. If no other means of escape be left, it rolls itself up within its covering by drawing in its head and legs, and bringing its tail round them, as a band to connect them more forcibly together: In this situation it sometimes escapes by rolling itself over the edge of a precipice, and generally falls to the bottom unhurt.

THE ANT-EATER

Is nearly four feet in length, exclusive of its tail, which is two and a half. It is remarkable for the great length of its snout, which is of a cylindrical form, and serves as a sheath to its long and slender tongue, which always lies folded double in its mouth, and is the chief instrument by which it finds subsistence.

This creature is a native of Brazil and Guiana, runs slowly frequently swims over rivers, lives wholly on ants, which it collects by thrusting its tongue into their holes; and, having penetrated every part of the nest, withdraws it into its mouth loaded with prey.—Its legs are so strong, that few animals can extricate themselves from its gripe. It is said to be formidable even to the Panthers of America; and sometimes fixes itself upon them in such a manner, that both of them fall and perish together; for its obstinacy is so great, that it will not extricate itself from its adversary even after he is dead.—The flesh has a strong disagreeable taste, but is eaten by the Indians.

There are several animals distinguished by the common name of Ant-eaters, which differ greatly in form.—They are divided into three classes, viz. the Great, the Middle, and the Lesser Ant-eater.

THE GUINEA-PIG

Though a native of the warm climates of Brazil and Guinea, lives and breeds in temperate and even in cold countries, provided it is properly taken care of. Its skin is of little or no value; and the flesh, which is very indifferent food, might be greatly improved, were they reared in warrens, and supplied with a proper choice of herbs.

These animals attain their full growth in eight or nine months. The female never goes with young above three weeks; and has been known to bring forth when only two months old: the first litter amounts to four or five, the se-

Plate 32

Ape

Bear Ape

Fox Ape

cond to five or six, and the rest to seven or eight, and some times to ten or eleven; and she does not suckle her young above twelve or fifteen days. A thousand might be raised from a single couple, in one year, did they not frequently destroy each other, or perish by the cold and wet.

The guinea-pig feeds on all sorts of herbs; especially on parsley, which it prefers to bran, flour, or bread. Of apples and other fruit it is exceedingly fond. It eats like the rabbit, quick, little at a time, but very often; and grunts somewhat like a young pig.

These animals are so delicate, that it is with difficulty they survive the rigour of winter. When they feel cold, they assemble together, press close to one another, and in this situation are frequently found dead.

LARGE APE, OR ORANG-OUTANG (*Plate* 32.)

Under this general appellation are included Apes, properly so called, without tails; Baboons with short tails; and Monkeys with tails as long as their bodies. In all of them, there is a disgusting resemblance to the human form; particularly in the use of the hand, and the grimace of the face. If this resemblance be mortifying to one who is fond of his appearance, or frivolous in his pleasures, it is only curious, if it be not consoling, to him who performs the relative duties, of an intellectual being. The Ape is further removed from man than many other animals. His action is the impulse of the moment. He improves not with experience He has no docility. His artifice is mischief; his frolic is madness; and he is filthy and thievish in his manners.

The Orang Outang has a nearer resemblance to man than either the baboon or the monkey. His disposition is milder; his face is flat; and, having buttocks, and calfs on his legs, he is formed for walking upright. He principally differs from man by the flatness of his nose, the closeness of his eyes, the largeness of his ears, and the shortness of the front. His thighs are shorter, his arms longer; the palm of his hands longer, and his feet rather resemble hands. With these trifling differences in structure, his habitudes are in many respect similar. That which the Count Buffon saw he thus describes: "His air was melancholy, his gait grave; he had neither the maliciousness of the baboon, nor the extravagance of the monkey. Signs and words were alone sufficient to make him act, when the baboon required a cudgel, and the monkey a whip. I have seen him sit dow at table, unfold his towel, wipe his lips, use a spoon, or a fork, to carry his victuals to his mouth, pour his liquor into his glass, and make it touch that of the person who drink along with him. When invited to take tea, he brought a cup and saucer, placed them on the table, put in the sugar, poured out the tea, and allowed it to cool before he drank it. He eat almost every thing, but preferred ripe and dried fruits to all other kinds of fruit." This animal was about two feet and a half high, but in a wild state they are said to be five and six feet high, and are remarkably strong. They assemble in small herds; they often attack and kill the negroes. When they fall in with elephants, they so beat them with their fists and clubs that they run roaring away from them. Woods and mountains of difficult access are their haunts. They are found in Africa, and in the larger islands of the East Indies.

M. de la Bresse assures us that the orang-outangs, which he calls quimpeazes, sometimes carry away the female negroes; and he knew a woman who lived among them for upwards of three years, during which time they supplied her very plentifully with fruits and other food.

"These animals," adds he, "grow from six to seven feet high, and are of unequal strength and agility. They build sheds, and make use of clubs for their defence: their faces are broad, their noses flat, their ears without a tip, their skins are fairer than that of a mulatto, but they are covered on many parts of the body with long and tawny-coloured hair: their body is extremely large, their heels flat, and yet rising behind about half an inch: they sometimes walk upright, and sometimes upon all fours, when they are fantastically disposed. We purchased," continues the above traveller, "two of these animals, one a male and the other a female, the former about fourteen months old, and the latter about twelve."

PIGMY APE.

The Pigmies were celebrated among the ancients as a dwarfish race of mankind, who waged war with cranes, and were extirpated by their victorious enemies. They live on herbs, corn, and fruit. They go in troops, and do much mischief in fields and orchards. Upon these occasions, one is appointed centinel; and, while there is no danger, with a call he encourages the troop to proceed: but, when alarmed, he creams with a loud voice and the rest, leaping from the trees, flee to the mountains. They inhabit Lesser Asia, and the northern parts of Africa. They are caught with inebriating liquors, which are placed for them in the caverns they frequent: they drink freely, and soon fall asleep, when they are easly taken. The Pigmy has no tail; has a flattish face, ears like a man, flat nails; is of an olive brown colour, and sits upright.

GIBBON, OR LONG-ARMED APE.

Has a flat face of a tawny colour; large eyes, but deep sunk; naked ears; a circle of hoary hair surrounds the face: He stands naturally erect; and, in this attitude, his arms reach the ground. He is about three feet in height. The Duke of Buccleugh had one which was wholly black. He seemed to be of a malicious and violent disposition. His motions were sudden; he sprung with agility, and was fond of swinging on his arms.

MAGOT, OR BARBARY APE.

He walks on two feet, but more willingly on four; his aspect is ugly, and his manners, gross. His face is long, and not unlike that of a dog. His nails are flat; his buttocks bare; the colour of his body a dirty greenish brown; his belly dull yellow. He grows in length above four feet; and inhabits Africa and the East Indies.

THE BEAR-APE (*Plate* 32.)

A very deformed beast of America, has his belly hanging very low; his head and face like a child's; his skin of an ash-colour, and hair like a Bear's; he has but three claws upon a foot, as long as four fingers, whereby he climbs up the highest trees, and for the most part lives upon the leaves of a certain tree common in those parts. It will not eat the flesh, not attempt the life of man; but, when tamed, is very fond of mankind. He does not seem wet, though he has been long in the rain.

THE FOX-APE (*Plate* 32.)

Is in the fore part like a Fox, and in the hinder part like an Ape. Under the common belly it has a skin like a bag, wherein it lodges, and carries its young, till they are able to provide for themselves. Neither do they come out of that receptacle, except it be to suck the Dam, or sport themselves; so that it is the best shelter against all its enemies. For it is exceedingly swift in running with that load, as if it had no burden at all.

GREAT BABOON. (*Plate 33*)

If brilliant colouring could alone constitute a beautiful animal, the Baboon, described by the translator of Buffon. would, perhaps, be the most beautiful of quadrupeds. The compiler drew, described, and well remembers that animal. The colours on the head and hips were as vivid as those on a pullet, but never harsh. Every colour was so softened and blended with a neighbouring colour, that they produced the most beautiful intermediate tints. The ribbed cheeks were sky-blue. A vermillion line began a little above the eyes, and running down between them, and on each side of the nose, spread over the snout. The inside of the ears was blue, which, softening from purple, terminated in vermillion. The beard at the roots was of the same dark colour with that on the upper part of the body; but soon changed into a deep orange, and ended in yellow. The hair on the belly was of an ash colour, and speckled like the sides of a partridge. The rump was vermillion, and the beautiful colours on the hips were only gradations from red to blue; but this gorgeous dress could not disguise a savage ferocity of aspect, which nobody could look on without apprehension. He was perpetually grinding his teeth, and fretting with rage; and he seemed eager to seize every one who came within reach of his chain. Baboons, though mischievous and fierce, are not carnivorous. They feed on fruits and roots, They are dexterous in robbing gardens; for which purpose they assemble in troops, and take their stations so that they throw the fruit from hand to hand, and over the walls, from the place of pillage to that of their rendezvous. The Baboon has cheek pouches, and is about five feet in height.

MANDRILL OR RIBBED NOSE BABOON,

Is more peaceable, and less ferocious than the former He frequently goes on two legs, and is fifteen inches in height. It is very lively and playful, is in continual motion, and leaps with astonishing agility. This species is said to come from the coasts of Guinea.

THE WANDEROW,

From Ceylon, is covered with black and brown hairs, has a bushy head, and large beard. Wanderows when taken young are easily tamed: and otherwise, when they are subject to strong passions, must be kept in iron cages. In the woods, they are very wild, and ferocious. They seldom walk erect.

Plate 33

Baboon

Monkey

THE MONKEY. *(Plate 38.)*

THE Macaque is a native of Congo, and very destructive to gardens. Being delicate in its choice of food, it examines every stalk of millet, throws away what does not please, and pulls more, destroying vast quantities which it does not use. These animals are never more than half tamed and always require a chain. When succulent plants fail. they eat insects and even repair to the sea-coast and catch crabs, which they do by presenting their tail to the pincers of the crab. whenever the pincers close, they carry it quickly off and eat it at their leisure. They are taken by means of a cocoa nut with a small hole made in it. To get at the kernel they squeeze their paw into the hole, and before they can disentangle themselves, they are seized on. Pennant considers the Malbrouck of Buffon only a variety of this species.

THE CHINESE BONNET

The hair on the crown of the head is long, lies flat, and is parted like that of a man. Their colour is pale brown. They inhabit, or rather infest Ceylon. In the garden and and field, they are equally mischievous as the Macaque. When driven from one end of a field, they will enter at the other. and carry off as much as their cheek pouches and arms will hold, they then hop away on their hind legs with their burden ; but if pursued; they drop whatever they carry in their arms, that they may the speedier escape with what they may have in their mouths.

THE MONA OR VARIED MONKEY

Has long hair on the sides of his face and throat. The upper part of the body is dusky and red, the belly whitish. He is about a foot and a half long, the tail is two feet. He is suspectible of education, but of little attachment.

THE CALLITRIX OR GREEN MONKEY

Has a small head, long muzzle, and black face and ears. His body is of a vivid green, mixed with a little yellow. His tail is longer than his body.

American monkeys differ from those on the old continent, having neither cheek pouches nor naked buttocks. They are likewise distinguished among themselves into what Buffon terms sapajous and sagoins. The sapajous have prehensile tails, which they can use as fingers to lay hold of any thing. The under part of the tail at the extremities is generally deprived of hair and covered with a smooth skin, this portion they can fold, extend, curl up, or unfold at pleasure, and by this they can suspend themselves from the branches of trees. The tails of the sagoins are longer, are covered with hair, and have no power of suspending them, or of answering any purpose of a hand.

THE SEAL

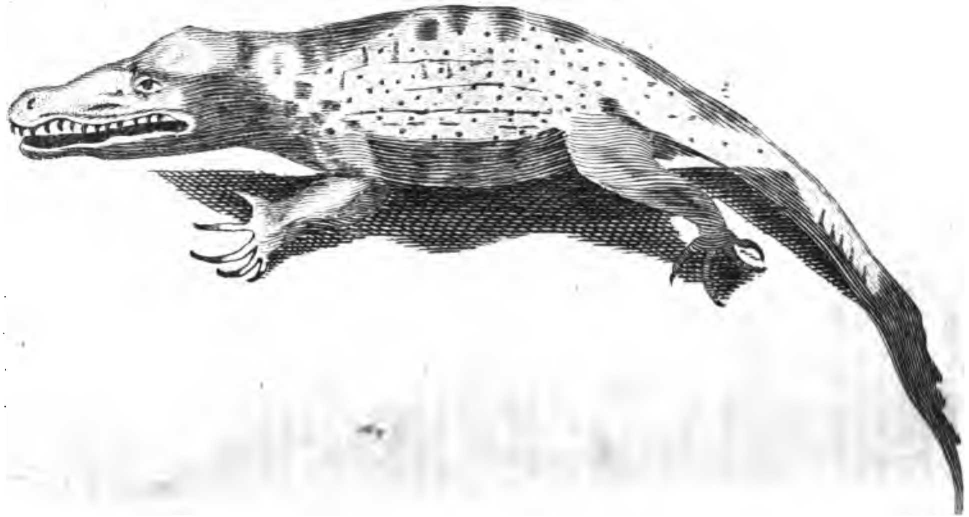
Is an amphibious animal, which seems to constitute one of the last steps of gradation between the race of quadrupeds and fishes, and which, although generally classed by naturalists among the former, appears to partake in a greater degree of the nature and habits of the latter. It is found, with some variation of species, in almost every quarter of the globe; but chiefly abounds in the northern seas of Europe, Asia, and America, and in the unfrequented regions towards the south pole.

The usual length of this animal is five or six feet. It is covered with short hair of various colours, smooth and shining. It has five toes on each foot, which are armed with strong sharp claws, whereby it is enabled to climb the rocks on which it delights to bask in the sun. On the unpeopled shores of the icy seas under the arctic and antarctic circles, and still nearer to the poles, these animals may be seen by thousands on the rocks, or on the sandy beach. The female sits on her hind legs while she suckles her young. The growth of seals is amazingly rapid, and the dam, after bringing them forth on the land, soon carries them with her into the sea, and learns them to swim; when they are weary she places them on her back. The old ones are very attentive to their young, which in their turn are docile and obedient.

The flesh of the seal was formerly esteemed a delicacy, although now but seldom eaten. That it was once admitted to the tables of the great is evident, from its constituting an article in the bill of fare of that sumptuous entertainment given by Archbishop Neville, in the reign of Edward IV. though perhaps scarcely a peasant in the kingdom, would at this day, be willing to make it a part of his dinner. Such is the change of manners, such the influence of custom.

If the flesh of this animal be fallen into disrepute, the oil produced by its fat is perhaps held in higher estimation, and sought with greater avidity than at the period alluded to, or in any of the preceding ages: a young seal yields above

Plate 34



Crocodile

eight gallons of this oil. Their skins are also very valuable and are made into a beautiful sort of leather used for shoes, and various other purposes so that if the seal be no longer considered as a delicacy of the table, it forms an important article of trade.

When taken young these animals are capable of being tamed, and will even answer to a name, and follow their masters like a dog.—A seal was exhibited in London, in the year 1750, which would answer to its keeper's call, take food from his hand, stretch out its neck as if to salute him, and crawl in and out of the water at command.

THE CROCODILE. (*Plate 34*)

Is one of the most terrible and mischeivous animals, not only of the lizard kind, but also of all those which nature has produced; fortunately for us, however, it is placed at a happy distance from Europe, and only confined to those regions where men are scarce, and the art of civilization in a great measure unknown.

To observe this formidable creature vested with all its natural terrors, grown to an enormous size, and propagated in surprising numbers, we must visit the uninhabited regions of Africa and America. In those vast rivers, which roll through extensive and desolate countries, where cultivation and commerce have never exerted their beneficial influence, and the most powerful and ferocious animals exercise their strength and rapacity uncontrolled by man, the crocodile reigns in perfect security, terrible to every living creature that enters the water, or approaches its margin.

Although this animal admits of several varieties, of which the crocodile, properly so called, and the cayman, or alligator, appear to be the principal; yet these distinctions seem to be made rather by travellers than by nature. The crocodile is, by them, confined chiefly to the old, and the alligator to the new continent; but the distinction of form and colour is very trifling. All the animals of this tribe agree in strength, size, and ferocity, and are justly considered as objects of terror wherever they are found.

The crocodile frequently grows to the size of twenty feet in length, and five feet in circumference. Some, it is said have been found of the length of thirty feet. The fore legs have the same parts and conformation as that of a man, each paw having five fingers. The hind legs, including the thigh and the foot, are about two feet two inches long. The hind paw is about nine inches long, divided into four toes, united by a membrane or web, like those of a duck, and armed with large claws. The head is long and flat, and the eyes are very small. You will observe, that the dimensions here given, are taken from one of these animals which was dissected by the Jesuits at Siam, and which was not one of the very largest size, as its whole length did not exceed eighteen feet, and yet its jaws opened to the terrible width of fifteen inches and a half; so that it was completely able to swallow a man. The Jesuits, by this dissection, made the important discovery, that the accounts we often hear of the crocodile being unable to turn itself readily, or to pursue its prey otherwise than by a direct course, are not to be depended on for their accuracy; for they found no less than sixty-two joints in the back-bone, which though very closely united, seemed to have sufficient play to enable the animal to bend like a bow to either side, and consequently to wheel round without any great difficulty. The skin is defended by a suit of armour, composed of large scales, disposed like parallel girdles, and almost impenetrable to a musket ball, so that the belly is the most vulnerable part. The general colour of the crocodile is a dark ash-coloured brown on the upper part, and a whitish citron on the belly; the sides being speckled with large spots of both these colours.

Such is the figure and conformation of this terrible animal, which, under the name of the crocodile, or the alligator, abounds in the Nile, the Niger, the Ganges, and other great rivers of Africa, and the warmer parts of Asia and America. In upper Egypt, and in the Niger, they are extremely destructive, lying in wait whole hours, and even days, at the edge of the water, quite motionless resembling the trunk of an old tree, until some animal come to drink.

This formidable creature spares neither man, nor the fiercest quadruped that comes within its reach. It seizes its victim with a spring, and instantly drags it into the water, and if the captive happen to escape, it pursues with greater celerity than might be expected from its conformation. The strength of the crocodile is amazingly great, and, as its scaly coat of mail is impenetrable; its offensive arms are irresistable; and escape, rather than contest, can alone afford security against its attacks.

Frequent combats happen between this creature and the tiger, one of the fiercest and most terrible of all quadrupeds.

Tigers frequently go down to the rivers to drink, and, upon these occasions, the crocodile, if near, never fails to seize them. The ferocious beast, however, seldom falls unrevenged; for the instant he finds himself seized, he turns with great agility and fierceness on his enemy, and endeavours to strike his claws into the crocodile's eyes, while the latter drags him into the water, where they continue to struggle until the tiger be drowned, and his triumphant antagonist feasts upon his carcase. Notwithstanding the formidable teeth and claws of the crocodile, its tail is an instrument of destruction scarcely less formidable; for with a single stroke of it, this animal has frequently been known to overturn a canoe, and then devour the poor savage, its conductor.

The crocodile, thus seizing and devouring every living creature without distinction, is equally dreaded by all. No animal, but man alone, can combat it with success. We are informed by Labat, that a negro, with no other weapon than a knife in his right hand, and his left arm wrapt about with a strong piece of cow's hide, has sometimes ventured to attack this animal in its own element. As soon as he approaches, he presents his left arm, which the crocodile greedily snatches into his mouth, when the negro immediately gives it several stabs in the soft part under the throat. The wounds thus inflicted, together with the water rapidly entering its mouth, which is involuntarily held open, and choking it, accomplishes its destruction. This is certainly a daring exploit; but few would consider it as a very delightful pastime.

The Siamese take abundance of crocodiles, by throwing several exceeding strong nets across a river, so that if the animal burst through one, he may be entangled in another. They then approach him in boats, and, by various means, secure him. When thus brought into subjection, and especially when bred up young, the crocodile is kept to divert the great men of the eastern countries of Asia. He is said to be managed in those parts in the same manner as a horse; a curb being put into his mouth, and the rider directing him at pleasure. In some parts also of Africa, as at Siam, this animal constitutes one of the appendages of savage pomp. Phillips informs us that, at Sabi, on the Gold coast, there are two pools of water near the royal palace, where crocodiles are bred as we breed carp in our fish-ponds.

The natives of some countries pursue it for the sake of its flesh, which, as well as its eggs, they consider as excellent food; but such is its amazing fecundity, that it would soon render the rivers in those warm climates unnavigable, and their banks uninhabitable, did not every beast and bird of prey, particularly the ichneumon, and the ibis, as well as a multitude of predaceous fishes, concur, with unceasing assiduity, in devouring its eggs or its young.

The crocodile produces from eighty to a hundred eggs of the size and form of a tennis ball: these she deposits in the sand, where they are vivified by the heat of the sun, and the young are excluded at the expiration of about thirty days. At this time, she is instinctively directed to return upon the land, and by scratching away the sand, to set them at liberty; and this recollection of the period of the vivification of her offspring which the crocodile possesses, may be added to the numerous and wonderful instances of animal instinct which the author of nature has implanted in his creatures. The young brood quickly avail themselves of their freedom; some run unguided to the water, while others are conveyed thither on the back of the parent. They all immediately disperse into different parts of the stream, where the greatest part are soon destroyed, and those that escape owe their safety chiefly to their minuteness.

THE BAT.

The bat is a genus of animals which seems to fill up the chasm between birds and quadrupeds. Hence naturalists, in describing it, have been in doubt whether to assign it a place with ærial or terrestrial beings. The ancient writers usually rank it among the former, but the moderns among the latter, to which it is certainly entitled; for, though it is furnished with a sort of wings, like the birds, and is capable of supporting itself in the air, it is viviparous, and bears a more striking resemblance to the quadruped creation in the formation of the lungs, the skeleton of the bones, and the teats, with which it suckles its young.

There are various species of the bat, in different parts of the world, and abound more particularly in the warmer climates.

The most common of the English species is that known by the name of the long-eared bat; and is about two inches in length: the body is covered with a short mouse-coloured fur, slightly tinged with red. Its wings are a transparent membrane of a dusky colour, which connects the four inferior toes of the fore feet and reaches from them to the hind legs, and from thence to the tail. The first toe, which is loose and flexible, serves it for a hook to suspend itself by; it being a common habit with it to remain a long time attached to old buildings, or the boughs of trees.

During the summer evenings, it amuses the contemplative wanderer in his silent walk, by circling round him in quest of insects.

In the winter months, when insects are not to be found, they remain suspended in lonely ruins, dark caverns, or decayed trees, in a state of perfect torpidness, their animal functions then seemed to be scarcely perceptible.

Mr. White, in his Natural History of Selbourne, informs us that the bat is capable of being tamed and educated. to a certain degree; and he was an eye witness to one, which would take flies out of a person's hand; and when any thing was offered it to eat, would bring its wings round before the mouth hovering and hiding its head, in the manner of birds of prey. The adroitness it shewed in shearing off the wings of flies was exceedingly singular and worthy of observation. Insects seemed to have been its most favourite food; but it would not reject morsels of raw meat, when offered; so that the notion, that bats desend chimneys, and gnaw the flitches of bacon, seems no improbable matter.

While he was amusing himself with this wonderful quadruped, he saw it several times confute the vulgar opinion, that bats, when down on a flat surface, cannot get on the wing again, by raising with the greatest ease from the floor. He likewise observed it run with more dispatch than he was aware of, but in the most ridiculous manner imaginable.

Some cruel experiments have been made, in order to ascertain how they would act when deprived of sight; and it has been sufficiently proved, that they possess some extraordinary sense, by which when blind, they avoid obstacles, as cautiously as other animals which enjoy the power of vision.

Instead of forming a nest like the birds, the female sticks herself in some chink of a wall, with her young, generally to the number of four or five, hanging at her breast, for about two days; after which, growing hungry, she goes in quest of prey, sticking her young against the wall, in her place, where they wait patiently for her return.

THE TERNATE BAT

Grows from the size of a pullet to that of a pigeon, and often extends, from tip to tip of the wings above five feet.

These monsters inhabit Guinea, Madagascar, and all the islands of the Indian ocean. They do not live in flocks; but it often happens, that such vast numbers take flight at sunset, that they perfectly obscure the sky. They fly from one neighbouring island to another, and return in clouds from the time it is light to sun-rise. They lodge during the day in hollows of trees, and swarm like bees, hanging together in great clusters. They have a dreadful cry; their smell is rank, they are fierce, bite and make great resistance when taken. They grow at certain times excessively fat, and are eaten by the Indians. They are so fond of blood, that in South America, they destroy vast numbers of large cattle, and the person who sleeps in the open air, with even his feet uncovered, is in danger to pass from a sound sleep into eternity. The bat is so dexterous a blooder, as to insinuate its tongue into a vein without being perceived. it then sucks the blood till it is satiated, all the while fanning with its wings, and agitating the air, in those hot climates, in so pleasing a manner, as to cast the sufferer into a still sounder sleep. The Ternate has large canine teeth. The tongue is pointed, terminated by sharp aculeated papillæ. It has no tail, and the membrane is divided quite behind to the rump. Some are of a reddish brown, others dusky.

END OF VOL. I.

Davison, Printer,
Alnwick.